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ABSTRACT

The 1977-78 Massachusetts statewide assessment of Career and Occupational Development (COD) included the development of test instruments, administration of the tests to a sample of thirteen- and seventeen-year-olds throughout the state, analysis and interpretation of the data, and dissemination of the results. The COD test was objective-referenced in nature. Each test item was matched to COD objectives in one of the following areas: job characteristics; job requirements; career decision making; basic skills; and attitudes and values. A panel of educators, school administrators, and business representatives met to evaluate the actual student performance in terms of their own "benchmark" of desirable achievement. Finally, the COD technical committee met to review all the results of the assessment and, with the input of the Benchmark Panel, generated a set of interpretative comments and recommendations for action. (This report describes the major outcomes of the assessment by reporting the following: performance on objectives; comparisons of the achievement of Massachusetts students with that of students within each age group; and highlights of the student and principal questionnaires. Also the interpretations and recommendations made by the panel and technical committee are presented. A companion document, CE 019 017, describes in detail the design and methodology of the assessment.) (BM)

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ED164868

Massachusetts Statewide Educational Assessment 1977-78

SUMMARY AND INTERPRETATIONS

CAREER AND OCCUPATIONAL DEVELOPMENT

Massachusetts Department of Education
Bureau of Research and Assessment
31 St. James Avenue
Boston, Massachusetts 02116

September, 1978

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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FOREWORD

Since 1974-75, the Statewide Educational Assessment Program has provided Massachusetts citizens with useful information about the quality of education in Massachusetts. The results of four years of the Assessment program have informed parents, students, educators, public officials and employers about statewide patterns of student performance in such areas as writing, mathematics, social studies, science, consumer education and career and occupational development.

During 1977-78, 13- and 17-year-old students were assessed, for the second time, in career and occupational development. This report describes the results of this assessment and provides information for the first time on trends in the performance of students in career and occupational development. Readers interested in more detailed technical information about this assessment may obtain a copy of the technical publication by contacting either the Bureau of Research and Assessment or one of the regional offices of the Department of Education.

Also for the first time, this report provides the reader with some interpretations of the meaning and implications of the assessment findings through the concentrated involvement of many educators throughout the Commonwealth. To them, and to the many others whose involvement may not have been explicitly acknowledged, the Board of Education expresses its sincere appreciation.

Finally, it should be pointed out that 31 school systems chose to use the tests and procedures developed for the statewide assessment at the local level. I am pleased to report that, overall, these systems found using this local option highly beneficial.

It is our feeling that this year's assessment reports should find even wider audiences than in the past. I am pleased, therefore, to present this year's Career and Occupational Development assessment findings for review by all interested citizens.

Charles Grigsby
Chairperson
Massachusetts Board of Education

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I. INTRODUCTION

Overview

PURPOSE. The Massachusetts Statewide Educational Assessment is a continuing series of annual evaluations of the knowledge, understanding, skills, and attitudes of Massachusetts public school students. As established by the Massachusetts State Board of Education, the purpose of the statewide assessment is to:

- provide citizens, students, parents, legislators, and educators with useful and accurate information on the quality of education in Massachusetts
- provide state-level decision makers with information necessary for setting educational policy
- help local school systems set their own objectives by providing them with statewide information on patterns of performance and attitudes and strengths and weaknesses of students
- enable local school districts to develop and to implement their own assessments by making statewide assessment procedures available to them

BACKGROUND. Since 1974, Massachusetts statewide assessments have been conducted in reading, mathematics, writing, social studies, citizenship, science, ecology, consumer education, career and occupational education, foreign languages, decision making, and school climate. The 1977-78 assessment marks a second survey of the reading and career/occupational education areas. In future years, repeated assessments will be made in other learning areas as well in order to examine changes in patterns of student performance.

THE 1977-78 ASSESSMENT. This year, the assessment in the area of Career and Occupational Development (COD) was conducted by National Evaluation Systems, Inc. (NES) of Amherst, Massachusetts, under contract to the Massachusetts Department of Education (MDE). Staff of both NES and MDE worked jointly on all aspects of the assessment program. Major program components included the development of the test instruments, administration of the tests to a sample of 13-year-olds and 17-year-olds throughout

the state, analysis and interpretation of the data, and dissemination of the results. In conjunction with the statewide assessment, MDE provided local school districts an opportunity to use the state's custom-designed materials to assess their own students through the Local Assessment Option.

USING THE RESULTS. The purpose of the statewide assessment is to permit a detailed examination of the performance of students statewide and of students in different educational regions and kinds of communities within the state. Categorizing students in this way allowed personnel in local school districts that did not participate in the local option to gauge the performance of their own students by inference from the results for their own region as a whole or for similar communities. This information can assist these districts in identifying areas of strength and weakness which warrant investigation of the achievement of their students in particular. Those districts that did participate in the local option may use the results presented here to make *direct* comparisons with statewide, regional, and kind-of-community results.

Measurement Instruments

THE TESTS. As in previous Massachusetts assessments, the COD test was objective-referenced in nature. Such tests are designed to describe achievement with regard to specific objectives; a student's score reflects achievement relative to definite tasks rather than to preset norms.

A Technical Committee composed of a cross section of Massachusetts educators, primarily career education teachers and counselors, provided leadership to the test development effort. Because the committee was interested in comparing the achievement of the two age groups, a single test was developed to be administered to both 13- and 17-year-olds. After a careful review of available materials, the committee identified five major objectives and a total of 113 matching test questions for inclusion on the test. A total of 61 of these items had been previously used in the 1974-75 Massachusetts assessment of 17-year-olds. In addition, 28 items were drawn from the materials of the National Assessment of Educational Progress (NAEP). Examination of scores on these items permits comparisons between current and previous Massachusetts performance, and between performance in Massachusetts, the Nation, and the Northeast Region. The remaining 24 items were drawn from the NES item bank.

THE OBJECTIVES. Each test item was matched to one of the following five COD objectives:

1. *Job Characteristics:* knowledge of the characteristics (classifications, major duties, nature of tasks, and salary) of various careers and occupations.

2. *Job Requirements:* knowledge of the abilities, training, and preparation required or useful for various careers and occupations.

3. *Career Decision Making:* knowledge and ability necessary to plan and implement career decisions.

4. *Basic Skills:* application of basic skills (numerical, communications, and interpersonal) useful in seeking and retaining employment.

5. *Attitudes and Values:* personal attitudes and values contributing to career success.

STUDENT AND PRINCIPAL QUESTIONNAIRES. The purpose of developing student and principal questionnaires was twofold: (1) to identify characteristics of students and their schools that might bear a relationship to achievement and (2) to provide a general characterization of students and schools that, in itself, might prove useful in policy decisions. Questionnaires, which were designed by the Technical Committee, were administered to all participating students and to principals of all schools enrolling these students.

Test Administration

To limit the burden placed on school personnel, all test sessions were conducted by trained test administrators. Testing sessions, lasting about 75 minutes, included the administration of both the student questionnaire and the test.

All data collection occurred during February and March, 1978. A total of 2,238 13-year-olds representing 93 schools and 2,201 17-year-olds representing 101 schools participated in the assessment.

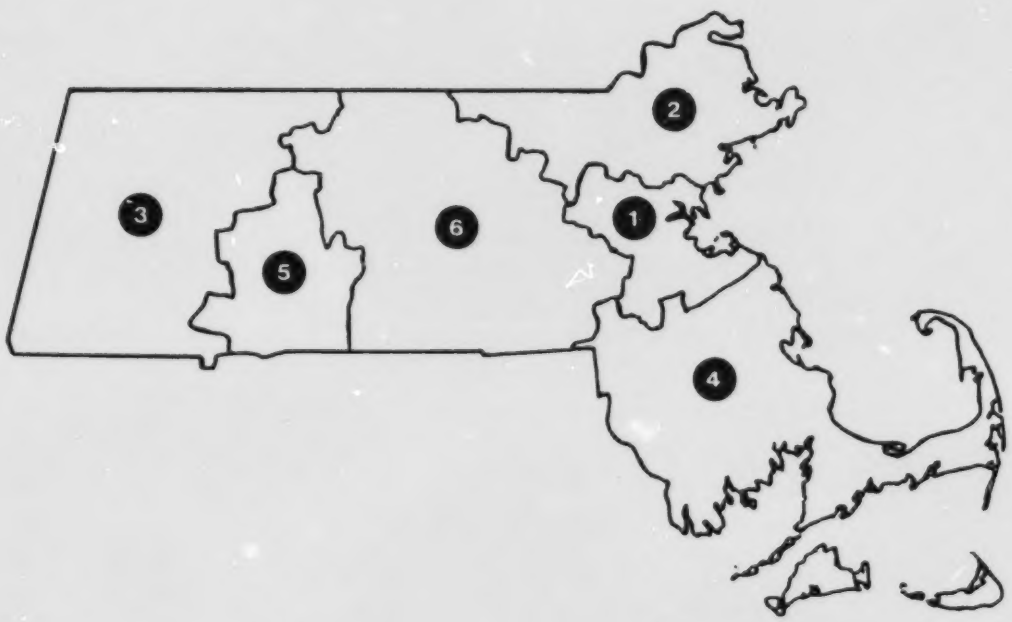
In order to ensure standardized and valid testing sessions, workshops on test administration procedures were provided for personnel of local school systems participating in the Local Assessment Option.

Sampling Design

PURPOSE. In order to provide information about the achievement performance of students throughout Massachusetts in a cost-effective manner, a sample of students at each age level was tested. The sampling procedure protected the anonymity of all students, schools, and school systems participating in the assessment.

The sample at each age level was designed to be representative of students from schools in each of the six Massachusetts Educational Regions and from schools in four kinds of communities. All students of the appropriate age level were eligible for participation *except for* those who were non-English-speaking or who were handicapped (physically, mentally, or emotionally) in such a way that they could not respond to the test.

STRATIFICATION VARIABLES. The map below shows the division of the state into regions as defined by MDE. Each region is identified in the key below the map. Appendix A lists all Massachusetts school systems and their respective region and kind of community.



1. Boston Region
2. Northeast Region
3. Pittsfield Region
4. Southeast Region
5. Springfield Region
6. Central Mass. Region

The four kinds of community (KOC) were defined as follows:

- *Big Cities:* communities designated as central cities according to the 1970 United States Census. Examples include Boston, Brockton, Haverhill, Holyoke, Lawrence, Worcester.

- *Industrial Suburbs:* suburbs of central cities with below-average family income ($16,000) and with more than 20% commercial and 7% industrial land use. Examples include Cambridge, Chelsea, Medford, Quincy, Peabody, Waltham, Lee, Monson.

- *Residential Suburbs:* suburbs of central cities other than Boston with above-average family income, and all nonindustrial suburbs of Boston. Examples include Arlington, Braintree, Framingham, Scituate, Walpole, Andover, Dover, Milton, Newton, Chelmsford, Shrewsbury, Wilbraham.

- *Other Communities:* resort towns in the Cape Cod and Berkshire areas, nonindustrial suburbs of cities other than Boston with below-average family income, towns with below-average family income, and communities with a population of less than 2,500. Examples include Barnstable, Chatham, Yarmouth, Stockbridge, Bridgewater, Hadley, Oxford, Stoughton, Newburyport, Taunton, Ayer, Kingston, Orange, Webster, Ashfield, Dunstable, Plympton.

SAMPLE COMPOSITION. Table 1 describes the composition of the sample at each age level in terms of sex, grade, region, and kind of community.

Reporting the Results

Parts II through V of this report describe the major outcomes of the assessment by reporting:

- performance on objectives
- comparisons of the achievement of Massachusetts students with that of students in the Nation and the Northeast Region
- comparisons of achievement among groups of students within each age group
- highlights of the student and principal questionnaires

TABLE 1

Sample Composition

Variable	Percentage of 13-Year-Olds	Variable	Percentage of 17-Year-Olds
SEX		SEX	
Male	46.6	Male	48.8
Female	53.2	Female	51.2
GRADE		GRADE	
6th	0.6	9th	1.5
7th	13.0	10th	7.6
8th	85.9	11th	64.6
9th	0.4	12th	26.2
REGION		REGION	
1. Boston	26.7	1. Boston	25.6
2. Northeast	19.8	2. Northeast	19.6
3. Pittsfield	9.1	3. Pittsfield	9.5
4. Southeast	17.2	4. Southeast	17.0
5. Springfield	10.5	5. Springfield	9.6
6. Central Mass.	16.6	6. Central Mass.	18.8
KIND OF COMMUNTIY		KIND OF COMMUNITY	
1. Big Cities	20.1	1. Big Cities	17.3
2. Industrial Suburbs	15.3	2. Industrial Suburbs	13.1
3. Residential Suburbs	37.8	3. Residential Suburbs	42.8
4. Other Communities	26.8	4. Other Communities	26.7

In addition, Appendix B contains results on each test item by age, sex, region, kind of community, and, where data is available, in the Nation, the Northeast Region, and the 1974-75 Massachusetts assessment.

More in-depth information about the methodology and outcomes of this year's assessment is available in the Technical Report. Limited copies may be obtained from the Bureau of Research and Assessment and the Regional Education Centers of the Department of Education.

Interpretive Activities

Part VI of this report represents the interpretations and recommendations based on the results of the assessment. Two activities were conducted to assist in the interpretive process:

- *Benchmark Panel:* A group of educators, school administrators, and business representatives from throughout Massachusetts met to discuss the assessment results. Their task was to evaluate the actual performance in terms of their own "benchmark" of desirable achievement. Given the percentage of students answering correctly each test item, the Benchmark Panel attempted to reach a consensus opinion on whether or not additional emphasis ought to be placed on teaching students the skills measured by that item.

- *Interpretive Workshop:* The COD Technical Committee met at a two-day workshop to review all of the results of the assessment. Using their professional judgment and the input of the Benchmark Panel, they generated a set of interpretive comments and recommendations for action based on the results.

The outcomes of these activities presented in Part VI are intended to be of use to those people—State Board of Education members, legislators, school superintendents, classroom teachers, guidance personnel, and laypersons—concerned with providing quality career education programs throughout Massachusetts.

II. MASSACHUSETTS RESULTS BY OBJECTIVE

Understanding the Results

To describe the achievement of Massachusetts 13- and 17-year-olds, the assessment results include performance scores on each test item and on each objective. In this section, results by objective are described for each age level in both graphic and narrative form. The full text of each objective appears on page 10.

Figure 2 displays the average percentage of matching test items answered correctly for each objective by each age group. If, for example, students at a given age level show an average of 68.2% for a particular objective, this means that, on the average, they answered correctly 68.2% of the matching test items.

The achievement scores presented here represent best estimates of the "true" achievement scores which would have been obtained had *all* students in the population, rather than a representative sample, been tested. Statistical techniques indicate that these estimates are most likely to be within two percentage points of the "true" scores of the population. If, for example, the statewide score is shown as 62%, one can feel confident that the "true" statewide score is between 60% and 64%. The purpose of this reminder is to caution the reader to refrain from over-emphasizing small differences between scores.

Summary of Results

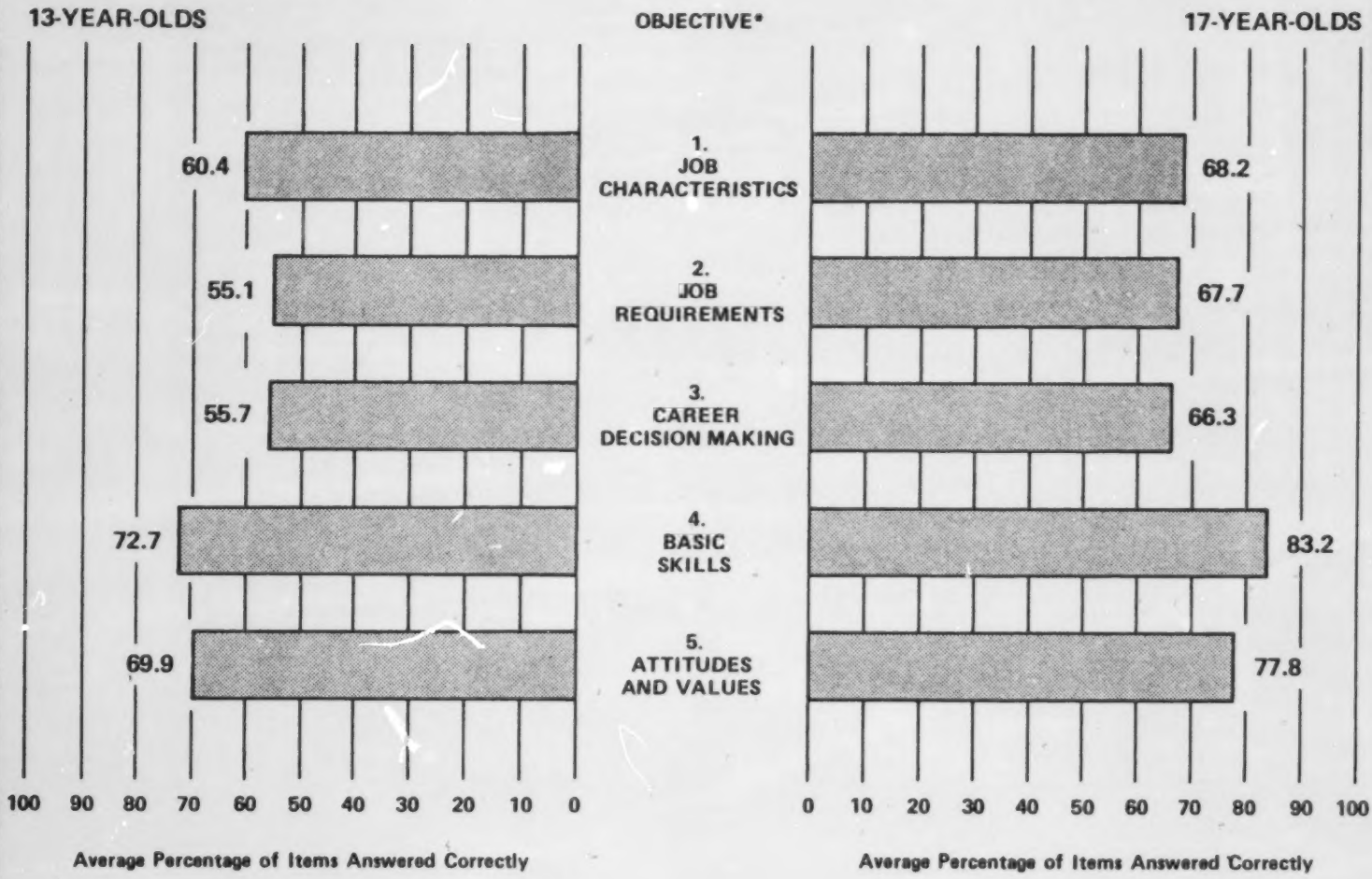
ACHIEVEMENT ON OBJECTIVES. Thirteen-year-olds scored between 55.1% and 72.7% correct across the five objectives. Their lowest performance was on Objective 2, Knowledge of Job Requirements, while their highest performance was on Objective 4, Basic Skills. Scores of 17-year-olds ranged between 66.3% and 83.2% correct, with lowest performance on Objective 3, Career Decision Making, and highest performance on Objective 4, Basic Skills.

On all five objectives, 17-year-olds scored about 10 percentage points higher than 13-year-olds. At both age levels, performance on Objectives 4 and 5 was considerably higher than that on the first three objectives.

YEAR-TO-YEAR COMPARISONS. Seventeen-year-olds performed at about the same level as Massachusetts 17-year-olds in the 1974-75 assessment on those test

FIGURE 2

Achievement of Massachusetts Students by Objective



*The identical test was administered to both age groups.

items that were identical in both years. Across the 61 identical items, performance varied such that students this year performed above, below, or the same as students in 1974-75 depending on the item. But, on the average, students this year scored about two percentage points higher than did those in 1974-75. While this difference may be statistically significant, it is probably not large enough to be educationally meaningful.

It should be noted that in the 1974-75 assessment the typical student was a twelfth-grader tested early in the school year, while in 1977-78 the typical student was an eleventh-grader tested in the middle of the school year. The fact that students this year performed about the same as those tested in 1974-75 is therefore cast in a more favorable light.

COD OBJECTIVES

1. *Job Characteristics*: knowledge of the characteristics (classifications, major duties, nature of tasks, and salary) of various careers and occupations.

2. *Job Requirements*: knowledge of the abilities, training, and preparation required or useful for various careers and occupations.

3. *Career Decision Making*: knowledge and ability necessary to plan and implement career decisions.

4. *Basic Skills*: application of basic skills (numerical, communications, and interpersonal) useful in seeking and retaining employment.

5. *Attitudes and Values*: personal attitudes and values contributing to career success.

III. COMPARING MASSACHUSETTS WITH THE NATION AND THE NORTHEAST REGION

Introduction

To put into perspective the achievement of Massachusetts students, results presented here compare Massachusetts students with students in the Nation and the Northeast Region tested by the National Assessment of Educational Progress (NAEP). The results described here are for only those items that were the same on both the NAEP and Massachusetts tests and administered to the same age levels in both assessments.

Figures 3 and 4 show the average percentage of these test items answered correctly for each objective by students in Massachusetts, the Nation, and the Northeast at the two respective age levels. The Northeast Region is defined by NAEP as including Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Washington D.C., Pennsylvania, and Maryland.

The reader should bear in mind that NAEP uses paced audiotapes to accompany the tests, while Massachusetts did not. Further, NAEP tests 13-year-olds in October through December and 17-year-olds in March and April, while Massachusetts tested both ages in February and March. There is no conclusive evidence as to the impact of these differences on achievement.

Summary of Results

There was a total of 28 NAEP items on the Massachusetts test, of which NAEP administered 19 to both age levels, six only to 13-year-olds, and three only to 17-year-olds.

COMPARISONS WITH THE NATION. Overall, Massachusetts 13-year-olds outscored their counterparts nationwide by between four and eight percentage points on two of the five objectives, and scored at about the same level on the remaining three objectives. On the other hand, Massachusetts 17-year-olds scored lower than 17-year-olds throughout the Nation by 6% to 9% on two of the objectives, and scored at about the same level on the remaining three objectives. Because only a small number of items is matched to each

FIGURE 3

Comparing Massachusetts, the Nation, and the Northeast
by Objective--13-Year-Olds

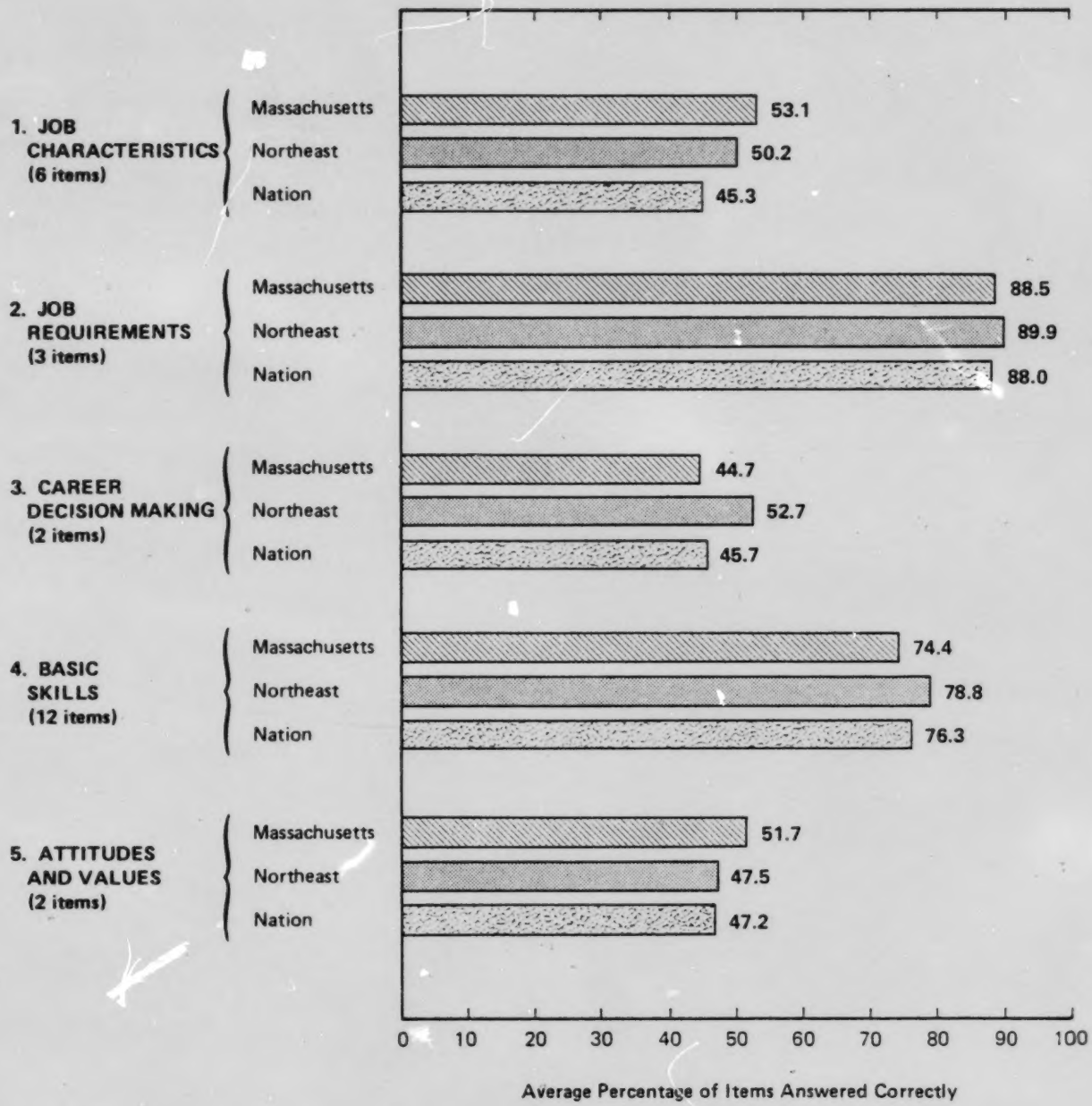
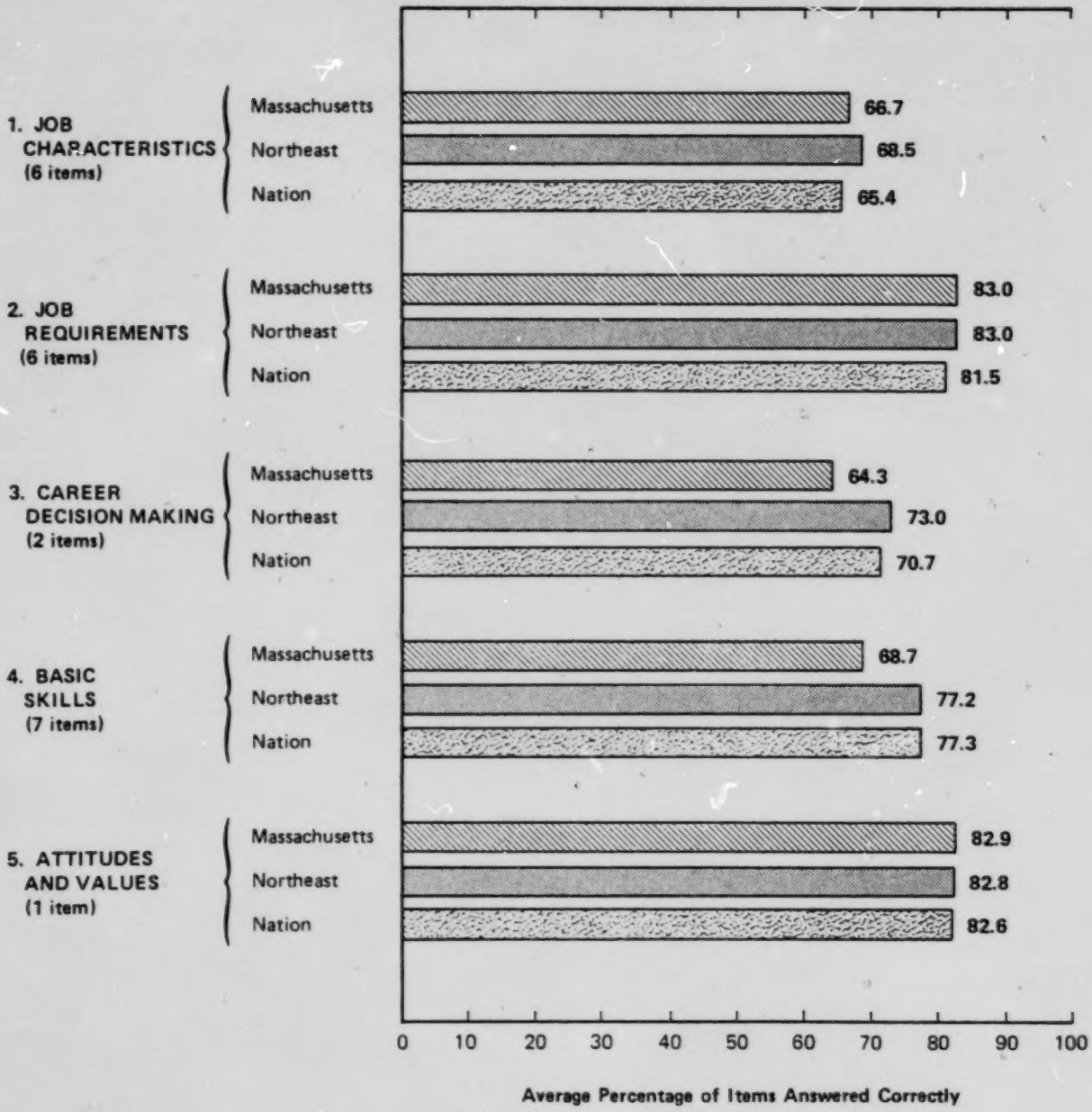


FIGURE 4

Comparing Massachusetts, the Nation, and the Northeast
by Objective—17-Year-Olds



objective (only one item for Objective 5 was administered to both Massachusetts and NAEP 17-year-olds, for example), the reader is cautioned not to make undue generalizations.

COMPARISONS WITH THE NORTHEAST. Because the Northeast traditionally outscores the Nation, the scores for students in the Northeast are a better standard against which to judge the performance of Massachusetts students.

Massachusetts 13-year-olds outscored their counterparts in the Northeast by 4% on one objective, scored lower than students in the Northeast by 4% to 8% on two objectives, and scored at about the same level on the remaining two objectives. Seventeen-year-olds in Massachusetts were outscored by those in the Northeast by about 8% on two objectives, and scored at about the same level on the remaining three objectives. The reader is again reminded of the small number of items matched to each objective.

OVERVIEW. In general, the relative performance of Massachusetts 13-year-olds was stronger than that of 17-year-olds. In addition, the achievement at both age levels was better in comparison to the Nation than to the Northeast.

COD OBJECTIVES

1. *Job Characteristics*: knowledge of the characteristics (classifications, major duties, nature of tasks, and salary) of various careers and occupations.

2. *Job Requirements:* knowledge of the abilities, training, and preparations required or useful for various careers and occupations.

3. *Career Decision Making*: knowledge and ability necessary to plan and implement career decisions.

4. *Basic Skills*: application of basic skills (numerical, communications, and interpersonal) useful in seeking and retaining employment.

5. *Attitudes and Values*: personal attitudes and values contributing to career success.

IV. COMPARING TOTAL TEST ACHIEVEMENT BY MASSACHUSETTS REPORTING GROUPS

Understanding the Results

The purpose of this section is to describe and compare the achievement of selected groups of students within Massachusetts. Most of the selected groups are defined on the basis of responses to the student or principal questionnaires. Sixteen questions from the student questionnaire, selected on the basis of their policy relevance, are used to define reporting groups (although some of these questions were not administered to both age groups) as well as three questions from the principal questionnaire. Results by region and kind of community are also reported.

In each case, the average for the reporting group is compared to that for *all* students at that age level within Massachusetts (the state average). The purpose of these analyses was to identify those factors that bear a relationship to student achievement. Achievement is defined as performance on the total test; that is, the average percentage of *all* items on the test answered correctly by students in each group.

The reader should note that the tables in this chapter indicate those differences in scores that are statistically significant. However, the reader should note that statistical significance is not to be equated with educational meaningfulness. Small differences between groups may be *statistically significant* in one case and not in another due to a variety of factors, but, even where statistically significant, differences may be too small to be educationally meaningful. What is educationally meaningful depends on the reader's judgment about the practical implications of given differences in scores.

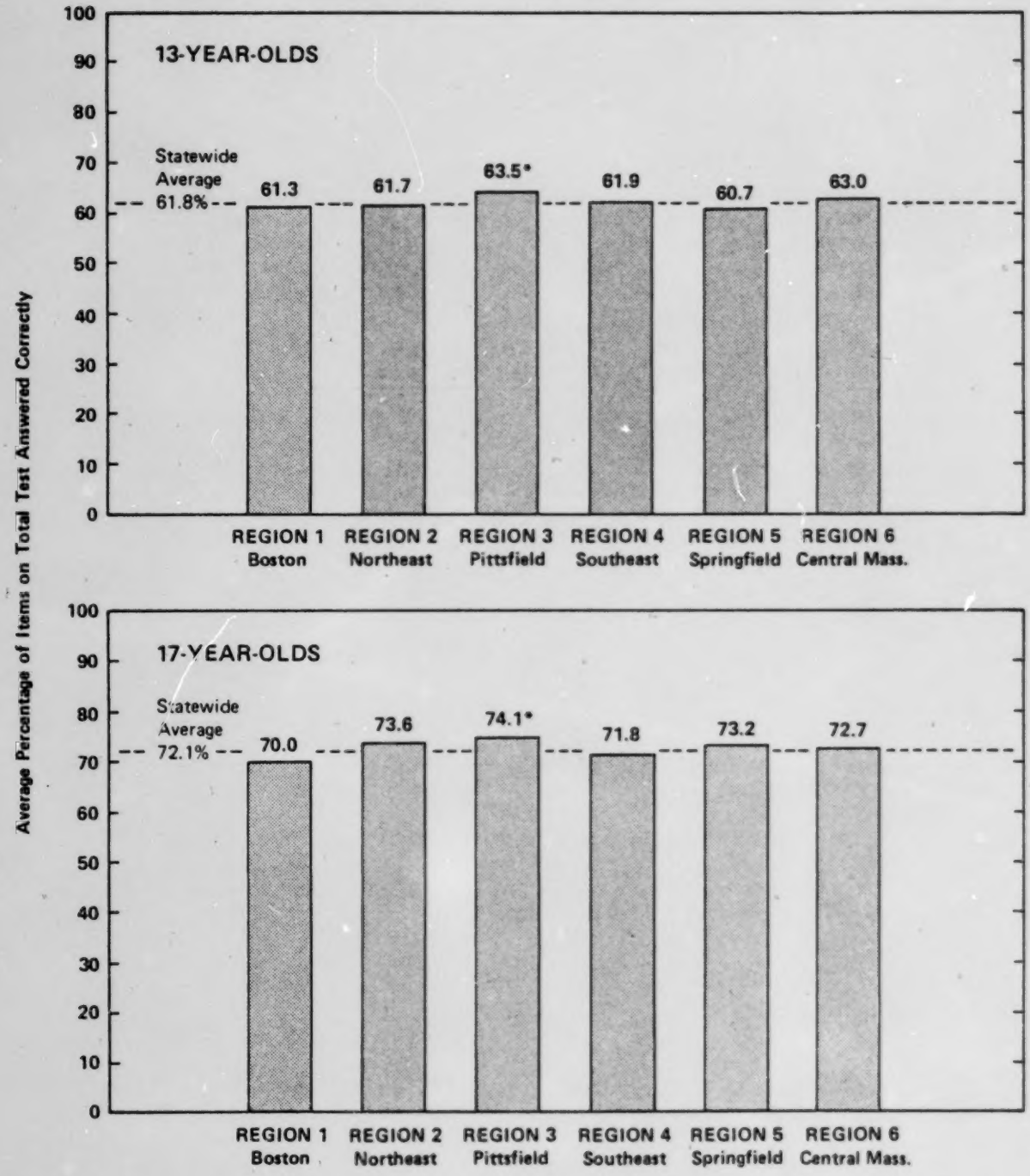
Further, the reader is cautioned to refrain from drawing cause-effect inferences from these data. The differences observed suggest only a *relationship* between a given factor and achievement, *not a causative influence* of the factor on achievement.

Results by Region and Kind of Community

AVERAGE ACHIEVEMENT. Figures 5 and 6 display *average performance* by region and kind of community, respectively. At both age levels, Big-City students

FIGURE 5

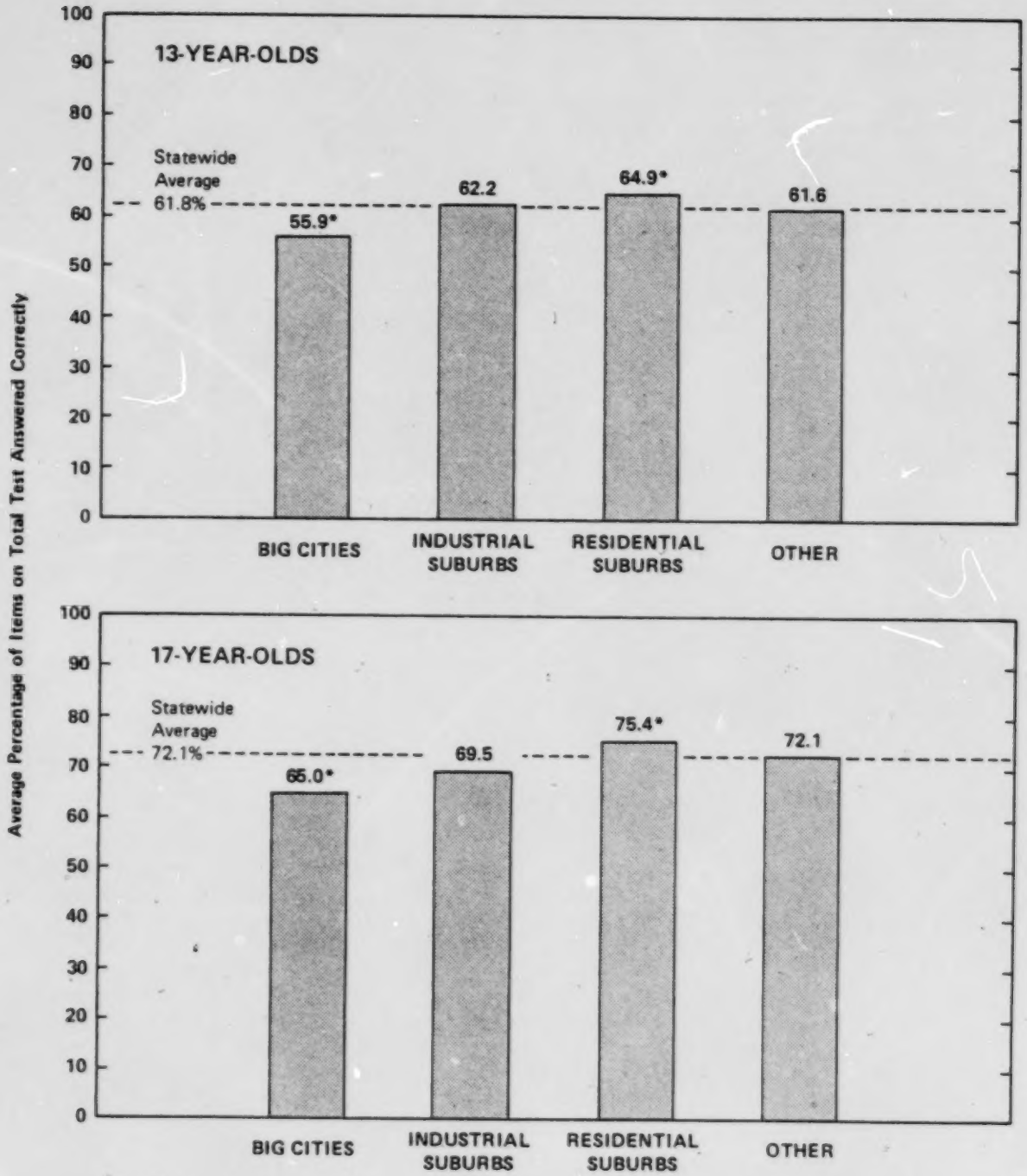
Achievement on Total Test by Region



*represents statistically significant difference between Region and Statewide Average.

FIGURE 6

Achievement on Total Test by Kind of Community



*represents statistically significant difference between Kind of Community and Statewide Average.

performed up to 7% below the statewide average, while students in Residential Suburbs exceeded the statewide average by 3%. The scores of students in Industrial Suburbs and Other places did not differ significantly from statewide scores.

At both age levels, differences between respective regions and the state average were generally very small. The only exception was found in Region 3, the Pittsfield Region, where both 13- and 17-year-olds outperformed students statewide by a small but statistically significant margin. The reader is reminded that each of the regions comprises a fairly large area, as shown on the map on page 4. For example, Region 1 consists of many communities outside of Greater Boston.

DISTRIBUTION OF RESPONSES. Tables 7 and 8 display *the distribution of percent correct* across the state and in each region and kind of community. Across the state and in each region, over half of the 13-year-olds answered correctly between 61% and 80% of all items on the test. Most of the other students answered correctly between 41% and 60% of the items. Similar results were found across the four kinds of communities, except in Big Cities, where more students' scores fell in the middle range. Very few students in any group answered correctly more than 80% or less than 40% of the items.

Between 62% and 75% of 17-year-olds answered correctly 61-80% of the test items, while 12% to 28% of them answered correctly 81-100% of the items. There were no major differences according to regional or community group.

Results for Additional Reporting Variables

The average performance of each of the remaining reporting groups defined by questionnaire responses are presented in Table 9.

SEX OF STUDENT. At both age levels, females perfomed slightly above the statewide average, while males performed slightly below, with differences not exceeding 2%.

ATTITUDE TOWARD SCHOOL. There was a general trend at each age level for performance to improve as the student's reported attitude toward school became more positive. Those who "strongly dislike" school performed lower than the state average by 5%. About 50% of 17-year-olds and 42% of 13-year-olds reported "liking" or "strongly liking" school, while 16-19% of both age groups "dislike" or "strongly dislike" school.

TABLE 7

Distribution of Total Test Score by Reporting Group for Massachusetts 13-Year-Olds

Reporting Groups	Percentage of Students with Achievement Scores in the Following Ranges:				
	0-20%	21-40%	41-60%	61-80%	81-100%
ALL STUDENTS	*0*	*4*	*34*	*60*	*1*
REGION:					
1. Boston	1	6	31	61	2
2. Northeast	1	4	35	59	1
3. Pittsfield	0	2	30	67	1
4. Southeast	0	3	40	56	2
5. Springfield	0	6	35	57	2
6. Central Mass.	0	4	31	64	1
KIND OF COMMUNITY:					
1. Big Cities	1	10	49	39	1
2. Industrial Suburbs	1	3	33	61	2
3. Residential Suburbs	0	2	24	72	2
4. Other Communities	0	4	37	58	1

TABLE 8

Distribution of Total Test Score by Reporting Group for Massachusetts 17-Year-Olds

Reporting Groups	Percentage of Students with Achievement Scores in the Following Ranges:				
	0-20%	21-40%	41-60%	61-80%	81-100%
ALL STUDENTS	*0*	*1*	*10*	*69*	*20*
REGION:					
1. Boston	1	3	13	62	21
2. Northeast	0	0	8	67	24
3. Pittsfield	0	0	6	72	23
4. Southeast	0	0	11	72	17
5. Springfield	0	2	8	70	21
6. Central Mass.	0	1	8	75	16
KIND OF COMMUNITY:					
1. Big Cities	2	4	18	64	12
2. Industrial Suburbs	0	1	16	69	14
3. Residential Suburbs	0	0	4	68	28
4. Other Communities	0	0	10	75	15

TABLE 9

Achievement by Student and Principal Questionnaire Reporting Groups

Reporting Group	Average Percentage of Items on Total Test Answered Correctly	
	13-Year-Olds	17-Year-Olds
ALL STUDENTS	*62*	*72*
SEX:		
Male	61*	71*
Female	63*	73*
HOW DO YOU FEEL ABOUT SCHOOL?		
Strongly dislike	57*	67*
Dislike	59*	70*
OK	61*	70*
Like	64*	75*
Strongly like	61	74
HAVE YOU DISCUSSED CAREER PLANS WITH A GUIDANCE COUNSELOR?		
Yes	61	74*
No	62*	70*
HOW MANY TIMES THIS YEAR HAVE YOU DISCUSSED CAREER PLANS WITH A COUNSELOR?**		
None		69*
Once or twice		73*
Three or more times		75*
Don't know or there is no counselor		65*

* Represents significant difference in score between students who selected this response and statewide average.
** Question not asked of 13-year-olds.

TABLE 9 (continued)

Reporting Group	Average Percentage of Items on Total Test Answered Correctly	
	13-Year-Olds	17-Year-Olds
HAVE YOU DISCUSSED CAREER PLANS WITH A PARENT?		
Yes	62*	73*
No	60*	69*
HAVE YOU DISCUSSED CAREER PLANS WITH A FRIEND?		
Yes	62	73*
No	62	69*
HAVE YOU DISCUSSED CAREER PLANS WITH A PERSON IN AN INTERESTING JOB?		
Yes	61*	72
No	63*	72
HAVE YOU DISCUSSED CAREER PLANS WITH A TEACHER?		
Yes	61	74*
No	62	71*
HOW MUCH ARE YOUR PARENTS INVOLVED IN YOUR SCHOOLWORK?		
Hardly at all	59*	71*
Only a little	62	72
Quite a bit	63*	72
A lot	61	73
DO YOU WANT A PROFESSIONAL OR MANAGERIAL TYPE OF JOB?		
Yes	63*	73*
No	60*	70*
I don't know	62	72

* Represents significant difference in score between students who selected this response and statewide average.

TABLE 9 (continued)

Reporting Group	Average Percentage of Items on Total Test Answered Correctly	
	13-Year-Olds	17-Year-Olds
DO YOU WANT A JOB AS A SKILLED LABORER OR AS A SALESPERSON?		
Yes	59*	68*
No	63*	74*
I don't know	63	73
DO YOU WANT A JOB WHICH REQUIRES SEMI- OR UNSKILLED LABOR?		
Yes	56*	65*
No	63*	73*
I don't know	60*	69*
HOW MUCH DO YOUR PARENTS WANT YOU TO GO TO SCHOOL OR COLLEGE AFTER HIGH SCHOOL?		
Hardly at all	55*	66*
Only a little	59*	67*
Quite a bit	62	72
A lot	64*	75*
WHAT ARE YOUR PLANS AFTER HIGH SCHOOL?		
Full-time job or armed services	58*	66*
Full-time job and night school	52*	68*
Specialized training (e.g., nursing, technical, or business school)	61	69*
2-year or community college	61	72
4-year college	66*	77*
Haven't decided	59*	68*
HAVE YOU EVER PARTICIPATED IN A WORK-STUDY, FLEXIBLE CAMPUS, SHARED EXPERIENCE, OR STUDENT INTERNSHIP PROGRAM?**		
Yes		69*
No		73*

* Represents significant difference in score between students who selected this response and statewide average.
** Question not asked of 13-year-olds.

TABLE 9 (continued)

Reporting Group	Average Percentage of Items on Total Test Answered Correctly	
	13-Year-Olds	17-Year-Olds
IN WHICH TYPE OF PROGRAM OR CURRICULUM ARE YOU NOW ENROLLED?**		
General		69*
Vocational		65*
College-bound		77*
Business or commercial		68*
Don't know		64*
IS YOUR SCHOOL AN ESEA TITLE I SCHOOL?†		
Yes	60*	71
No	63*	73
HOW WOULD YOU RATE PARENTAL SUPPORT OF YOUR SCHOOL'S POLICIES AND PROCEDURES?†		
Excellent	63	74
Good	63*	72
Average	59*	71
Fair	59	71
Poor	50*	67*
HOW WOULD YOU RATE THE ATTITUDES OF YOUR STUDENTS TOWARD SCHOOL AND LEARNING?†		
Excellent	63	74
Good	63*	74*
Average	58*	70
Fair	62	65*
Poor	—	65*

* Represents significant difference in score between students who selected this response and statewide average.
** Question not asked of 13-year-olds.
† Principal questionnaire item.

DISCUSSIONS ABOUT CAREER PLANS

- *Discussions with guidance counselor:* At the 17-year-old level only, those students who have discussed career plans with a guidance counselor outperformed those who have not. The percentage of students who reported talking to a guidance counselor increased from 24% among the 13-year-olds to 61% for the 17-year-olds. Further, among 17-year-olds who have talked to counselors within the past year, performance increased with frequency of such consultations.

- *Discussions with parents:* Students who reported discussing their career plans with a parent tended to perform more highly than those who have not. The difference in scores was larger among 17-year-olds (4%) than among 13-year-olds (2%). At both age levels, about nine out of 10 students reported having had such discussions.

- *Discussions with friends:* Among 17-year-olds only, those who have talked with friends about career plans outperformed those who have not. About eight of every 10 students in both age groups indicated that they have had these discussions with friends.

- *Discussions with a person in a job of interest:* At the 13-year-old level only, those who reported that they have talked with a person in a job of interest to them slightly outperformed those who have not. More 17-year-olds than 13-year-olds (47% versus 34%) indicated that they have done so.

- *Discussions with teachers:* Achievement scores were not related to whether or not 13-year-old students reported discussing their career plans with a teacher. Seventeen-year-olds who indicated that they have spoken to a teacher about their future career plans scored slightly higher than the statewide average, while those who reported that they have not had such discussions scored slightly below the state. More than twice as many 17-year-olds as 13-year-olds (37% versus 15%) have talked with a teacher about career plans.

PARENTAL INVOLVEMENT. In both age groups, students who reported that their parents were involved in their schoolwork "hardly at all" scored slightly below the statewide average. The differences, however, were 3% at the 13-year-old level and only 1% at the 17-year-old level. More 17-year-olds (18%) than 13-year-olds (11%) reported that their parents were "hardly at

all" involved, while 48% of the older students and 61% of the younger ones reported "quite a bit" or "a lot" of parental involvement.

FUTURE PLANS

- *Career aspirations:* At both age levels, the relationship between career aspirations and achievement was the same. Students who indicated that they would like to have a job that could be described as "professional" or "managerial" performed slightly above the statewide average, while those who indicated that they would like to have a middle-level ("sales" or "skilled labor") or low-level ("semi-skilled" or "unskilled") job scored below the statewide average. A little more than half of the students at each age level indicated that they aspired to a professional or managerial job. Almost a third wanted a middle-level job, and about 10% aspired to "semi-" or "unskilled" jobs.

- *Parental encouragement to continue schooling:* At both age levels, there was a strong tendency for performance to improve with the increased emphasis placed by parents on postsecondary education. Students whose parents wanted them to continue schooling after high school "only a little" or "hardly at all" scored below the statewide average by 3-7%, while students whose parents encouraged them "a lot" scored higher than the state by 2-3%. Between 20% and 23% of the students in each age group reported that their parents wanted them to continue their education after high school "only a little" or "hardly at all," compared to 76-80% whose parents encourage them "quite a bit" or "a lot."

- *Post-high-school plans:* At both age levels, students who reported that they plan to attend a four-year college scored 4-5% higher than the statewide average, while those who plan on a full-time job or on combining school with a full-time job scored 4-10% lower than the students statewide. At both age levels, 41% of the students plan to attend four-year-college, while 12-19% plan on full-time jobs or combining jobs and school. Further, 31% of 13-year-olds and 18% of 17-year-olds have not yet decided on post-high-school plans.

CURRENT PROGRAM ENROLLMENT

- *Participation in work-study and other programs:* Seventeen-year-olds were asked if they had ever participated in a work-study, flexible campus, shared experience, or student internship program. Those who

responded "yes" scored below the statewide average by 3%. Only 18% of 17-year-olds reported that they have at some time participated in a work-study or related program.

- *Present high school program:* At the 17-year-old level, students who indicated that they were enrolled in a college-bound program scored 5% higher than the statewide average, while students who said they were enrolled in a general, vocational, or business program scored 3-7% lower than the statewide average. Just over half of the students (53%) reported that they were in college-bound programs, and approximately 13% of the students indicated that they were enrolled in each of the other types of programs.

PRINCIPAL QUESTIONNAIRE VARIABLES

- *School participation in ESEA Title I program:* At the 13-year-old level only, students in schools which receive ESEA Title I funds performed slightly below the state average, while those in non-Title I schools scored slightly above the state average. At the 17-year-old level, there was no significant difference between either of these groups and the statewide average. Just under half of all principals replied that their schools participated in the ESEA Title I program.

- *Parental support of the school:* At both age levels, students whose principals reported that parental support of the school is "average," "fair," or "poor" performed less well than those whose principals reported parental support as "good" or "excellent." Approximately three of every four principals rated parental support of their schools as "good" or "excellent," while very few (5% and 10% of principals of 13- and 17-year-olds, respectively) rated parental support as either "fair" or "poor."

- *Student attitude toward school:* At the 17-year-old level, students whose principals rated student attitude as generally "fair" or "poor" scored 7% below the state average, while those whose principals rated attitudes more favorably tended to perform more highly. Results were not as clearcut at the 13-year-old level. However, very few principals (2-8%) chose the "fair" or "poor" rating, while about 70% chose ratings of "good" or "excellent."

COMPARISONS BETWEEN VOCATIONAL STUDENTS. The Division of Occupational Education of the MDE requested a comparison of the test performance of those 17-year-olds enrolled in vocational programs in regular and regional academic high schools with the performance of 17-year-olds enrolled in vocational programs in regional vocational-technical schools. Additional test administrations were conducted to insure that a sufficient number of students from each category were represented. Including the "oversampled" students and the regular statewide sample, there were a total of 175 vocational students in academic high schools and 398 vocational students in regional vocational-technical schools.

The results are quite straightforward. The average achievement performance on the total test was the same for the two groups. Furthermore, the difference in achievement on each of the five objectives was smaller than 1% in each case.

V. ADDITIONAL HIGHLIGHTS OF THE PRINCIPAL AND STUDENT QUESTIONNAIRES

Introduction

In addition to an analysis of those questionnaire variables which were shown in Section IV to bear a relationship to achievement, an examination of the responses to additional questionnaire responses may, in itself, provide a policy-relevant characterization of students, principals, and schools throughout Massachusetts. Highlights of these questionnaire responses are presented below along with a profile of the outstanding differences between students in Big Cities and Residential Suburbs. Other questionnaire items that were judged by the Committee to lack policy relevance are detailed in the Technical Report.

Highlights of the Principal Questionnaire

OBJECTIVE-REFERENCED INSTRUCTION. Principals were asked to rank order the objectives assessed by the test in terms of instructional emphasis in their schools and to indicate their satisfaction with student achievement on each one.

Considering the five objectives as ranked from 1 = highest to 5 = lowest emphasis, the objectives were ranked, on the average, by principals as follows:

High School Principals	Middle School Principals
1. Knowledge of Job Requirements	1. Attitudes and Values
2. Basic Skills	2. Knowledge of Job Requirements
3. Attitudes and Values	3. Basic Skills
4. Career Decision Making	4. Career Decision Making
5. Knowledge of Job Characteristics	5. Knowledge of Job Characteristics

Between 66% and 69% of high school principals were either "satisfied" or

"very satisfied" with achievement on Attitudes and Values and Basic Skills, while only 54-56% felt this way with regard to the other three objectives. This discrepancy was even more substantial at the middle school level, where 62-70% were satisfied to some degree about Attitudes and Values and Basic Skills but only 36-46% felt the same way about the other three objectives.

WAYS TO IMPROVE THE CAREER EDUCATION PROGRAM. Principals were asked to cite two major ways in which the career education programs in their schools could be improved. Principals tended to select answers which favored the integration of career education into the regular curriculum, rather than the separation of such instruction from students' day-to-day school experience. About 60% of all principals advocated "more infusion of career education into the curricula of other courses," and about 40% desired "more inservice training for academic teachers regarding career education." Just under 20% of principals of 17-year-olds indicated a need for more guidance or career counseling personnel, more career classes, and more innovative methods; slightly more principals of 13-year-olds cited these needs. In addition, 19% of middle and junior high school principals and 11% of high school principals cited a need for more inservice training of guidance staff in career education.

MINIMUM ACHIEVEMENT STANDARDS. At both age levels, more than three out of four principals responded "Yes" to the question: "Do you believe that all students must meet some specified minimum standard of achievement in reading, writing, and mathematics as one requirement for the awarding of the high school diploma?" (79% and 76% for principals of 13- and 17-year-olds, respectively).

The overwhelming majority of principals felt that, if minimal competency standards were to be used as a basis for high school graduation, the local educational agencies should have *some* responsibility for setting those standards. About one-third of all principals felt that the responsibility should rest solely with local educational agencies, while another 50% replied that the local agencies and the State Board of Education should share that responsibility jointly. Only about 9% of the principals at both age levels replied that the State Department of Education should have sole responsibility for setting standards, and only 1% of the principals indicated that the stage legislature should set minimal competency standards.

SCHOOL ATTENDANCE. Almost 83% of the middle school principals reported that their schools have an average first-quarter attendance rate of 91% or better, but only 69% reported this high a rate for the second quarter. At the high school level, 77% of the principals reported first-quarter attendance at 91% or above, while just under a half reported the same attendance for the second quarter.

AVAILABILITY OF CAREER COURSES. About three-quarters of principals of 17-year-olds responded that career courses were "generally" available at their schools, while another 18% said that these courses were "somewhat" available. (This question was not asked of principals of 13-year-old students.)

Highlights of the Student Questionnaire

CAREER APTITUDE TESTS. A sizable proportion of students at each age level indicated that they had never taken a test designed to help them decide on their career plans (53% of 13- and 37% of 17-year-olds). Furthermore, about 12% of 13-year-olds and 23% of the 17-year-olds did not know whether or not they had ever taken such a test.

USEFULNESS OF FIELD TRIPS. Almost nine of every 10 students replied that school-sponsored field trips taught them things that are useful for them to know.

USEFULNESS OF SCHOOLING. Most students reported feeling that their schooling has been "somewhat" or "very" useful in helping them to fulfill their career objectives. Only 12% and 16% of the 13-year-olds and 17-year-olds, respectively, replied that school has been "not very useful" in this respect.

CERTAINTY ABOUT CAREER ASPIRATIONS. At both age levels 78% of the students reported that they were either "very sure" or "somewhat sure" about the kind of job that they would like to have in the future.

VOLUNTEER WORK. Among 17-year-olds, 30% indicated that they have, at some time, done volunteer work in a career area of possible interest to them.

Profile of Students and Schools in Big Cities

Results reported earlier indicated that Big-City students tended to score below the statewide average, while students in Residential Suburbs tended to score above the statewide average. An attempt was made to identify characteristics of Big-City Schools that may contribute to differential

assessment in comparison to students in Residential Suburbs. The resultant "profile," based on responses to the principal and student questionnaires, is presented below.

In comparison to Residential Suburbs, *Big Cities* are places in which:

- the proportion of 17-year-olds in the ninth or tenth grade is larger.
- students are likely to be given drill work or reading and writing assignments less frequently.
- 13-year-olds are more likely to discuss their career plans with a guidance counselor, while 17-year-olds are less likely to do so.
- 17-year-olds are less likely to have taken a career aptitude test.
- a larger proportion of parents of school-age children work in low-status occupations.
- students are less likely to aspire to high-status occupations.
- parents of 17-year-olds are less likely to encourage postsecondary education.
- students are less likely to plan on attending a four-year college.
- a larger proportion of 17-year-olds are enrolled in vocational programs and participate in work-study programs.
- principals are less likely to encounter "excellent" or "good" parental support of the school and student attitudes toward school.
- the average attendance rate in each quarter tends to be lower.

VI. INTERPRETATIONS AND RECOMMENDATIONS

Introduction

This section of the report contains an analysis and interpretation of the findings of the Assessment and a set of recommendations based on those findings. The work of interpreting the results was the responsibility of the Career and Occupational Development Technical Committee. The recommendations developed by the Committee are appropriate to several audiences, including, but not limited to, teachers, guidance personnel, local administrators, curriculum planners, and state-level decision-makers.

The Context: The Committee's View of the Findings

The findings were viewed by the Committee as constituting baseline information about the Career skills and knowledge of Massachusetts students on the five high-priority learning objectives. The Committee imbedded their interpretations and recommendations in the context of their professional *expectations* for students statewide in consideration of the particular group of items for each objective. In addition, they utilized the input of the Benchmark Panel described earlier (see p. 7), where consensus (at least two-thirds agreement among panel members) was achieved.

The reader should bear in mind that the same test was administered at both age levels. This duplication permitted a comparison of the achievement of each age group on each item and objective. Given these comparisons, it was hoped that achievement would increase as the age level increased. Where substantial increases did not occur, this information is useful for instructional planning because it serves as one indication that a particular skill is not uniformly reinforced or developed at the high school level.

The reader should also note that, in evaluating student performance, the Committee's focus was always on strengths and weaknesses of a given age group across the objectives tested at that level. Within this context, the Committee made interpretive comments on performance which fell short of expectations or which met or exceeded expectations. While most recommendations are based on perceptions of weaknesses in students' skills, the Committee emphasized that the observed strengths should not be overlooked. In particular, areas which showed high performance by students should continue to receive the same quality of instructional and curricular effort

in order to maintain students' strengths in these areas.

References made to specific test items are made in the analyses that follow. Each of these items is described in Appendix B (p. 55) along with the percentage of students answering correctly.

Objective I: Knowledge of Job Characteristics

The Committee was generally satisfied with the performance of 13-year-olds on this objective (60% correct) especially in relation to national achievement, but was not impressed by the performance of 17-year-olds (68% correct) in comparison to 13-year-olds. The improvement in NAEP item scores from the 13- to the 17-year-old level was greater in the Nation and Northeast than in Massachusetts. While there was interest in maintaining the strengths among 13-year-olds through continued program emphasis, a concern was raised that additional emphasis at the high school level appears to be required.

Because it was the consensus of the Benchmark Panel participants that approximately three-quarters of the items for this objective do not require additional emphasis in instruction, the Committee focused primarily on the five items that were seen as needing attention (#5, #39, #40, #41, and #56). Consideration of the skills measured by these items resulted in the conclusion that students need to be made more aware of (a) the vocabulary used in job titles to describe various types of occupations, (b) the commonalities in the characteristics of jobs within each occupational cluster, (c) the educational requirements and benefits of given jobs within each cluster, and (d) the nature of interpersonal responsibilities common and unique to various types of occupations.

In addition, it was noted that there were considerable differences between the performance of male and female students on a number of items (e.g., #8, #9, and #40). It appeared that a larger proportion of males tended to know the characteristics of traditionally "male" jobs, while more females knew the characteristics of traditionally "female" jobs. It was concluded that stereotyping of occupations according to male and female roles must continue to be attacked by teaching and counseling personnel.

Because the Committee was aware of the tremendous range and variety of occupations in the world of work, they were sensitive to the limitations on time and resources in providing students information about job characteristics. Therefore, the *process* of finding information about jobs was viewed as a critical focus of career education. It was considered most important that students are made aware that career development and decision

making are lifelong processes, especially given the constantly changing job market and the need to consider mid-life career changes and retirement plans. Thus, knowing *how* to find information about jobs is important both now and later in their lives. In-school programs, given the time available, should focus on major occupations within each cluster; and these should include the less visible, or "hidden" occupations (e.g., "machinist") as well as emerging occupations.

RECOMMENDATIONS

1. Continue to maintain the standing of students at the middle level relative to national norms by providing career education programs that ensure basic occupational knowledge among pre-13-year-olds.

2. Increase efforts directed at developing and strengthening career education programs at the secondary level in order to provide high school students with knowledge of a broad range of occupations and their characteristics.

3. Within the context of a stronger career education effort:

   a) increase students' awareness of the major occupational clusters and their knowledge of the primary job types and titles within each.

   b) ensure that the range of jobs covered includes emerging and less visible occupations.

   c) increase the emphasis on instruction related to the *process* of finding out information about jobs, including use of economic forecasts and the Occupational Outlook Handbook.

4. Provide for increased concentration on the elimination of sex stereotyping within career education programs by increasing the knowledge of both sexes about the characteristics of jobs not traditionally open to them.

   a) continue to attack the traditional barriers that exist for sex-linked occupations.

RECOMMENDATIONS (continued)

b) increase efforts to acquaint women with occupations that are emerging and therefore still sex-neutral or sex-mixed (e.g., environmental technology).

5. Encourage career professionals to ensure that their programs and services are preparing women for jobs on the assumption that they are likely to be *primary* (rather than *marginal*) wage earners.

Objective II: Knowledge of Job Requirements

On this objective, the Committee was again satisfied with the performance of 13-year-olds (55% correct), but concerned that the performance of 17-year-olds (68% correct) was not stronger to the extent that might be expected. However, while there were only a small number of items available for comparison, the Committee was satisfied that Massachusetts students of both ages performed comparably with their national and Northeast counterparts. Across the 30 items assessing this objective, it was the consensus of the Benchmark Survey that approximately 30% at the 13-year-old level and 15% at the 17-year-old level required additional emphasis.

Of primary concern was the fact that on a number of items (e.g., #27-35, and #54), students appear to be overestimating the education or training required for given jobs. Given this trend, the Committee was concerned to caution career education professionals against "overselling" higher education regardless of individual student needs and abilities. For example, just over half of the 13-year-olds were aware that "apprenticeship" is the appropriate training for a "glassblower" (item #28) and "blacksmith" (item #32). The question was raised as to whether these students are aware of what constitutes "apprenticeship."

The issue of sex stereotyping of jobs was again raised in connection with this objective. For example, 47% of male 17-year-olds and only 27% of their female counterparts were aware that an "electrician" requires knowledge of "general" mathematics, while 78% of 17-year-old females as opposed to 63% of the males were aware of the training required to be a "social worker." Even more striking was the fact that on this item, female achievement was

lower among 17-year-olds than among 13-year-olds; it was hypothesized that this result reflects females' "learned ignorance" about a male-dominated (and financially rewarding) occupation or anxiety about mathematics as a barrier to some career options.

The Committee therefore reiterated their suggestions regarding an increased focus on eliminating sex stereotyping in career education programs and services in order to ensure that males and females are equally apprised of the education and training required for jobs not traditionally open to them.

Also in connection with those items requiring students to identify jobs requiring "general" or "advanced" mathematics skills (items #84-88), the Committee was concerned about those cases in which a relatively low percentage of students answered correctly. While there was some question as to whether these labels for math skills were unambiguous enough to be validly interpreted by students, the importance of mathematics ability to a wide range of jobs was emphasized by the Committee. It was considered important that students be made aware of the need to develop such skills in order to increase their employability in general and the probability of obtaining a desired job in particular.

RECOMMENDATIONS

1. Increase the focus on teaching students about the education and training required for a broad range of jobs.

2. Increase the understanding of all students, but particularly females, of the importance of developing mathematics skills in order that they not be disadvantaged from obtaining jobs in high technology trades and a variety of other trades as well.

Objective III: Career Decision Making

The Committee was generally dissatisfied with the overall performance of both age groups on this objective, since it represented the poorest performance on an objective by 17-year-olds (66% correct) and the second poorest among 13-year-olds (56%). The Committee therefore agreed with the consensus of the Benchmark panel that this area is in most need of

additional emphasis; the Benchmark results indicated that just under 50% of the items (a larger proportion than on any other objective) required additional emphasis. Given the importance of career decision making in general, the Committee was particularly concerned that, on the average, students of both ages in residential suburbs outperformed those in big cities by 10-12% on this objective.

One item (#4), singled out to substantiate the Committee's concern about performance on this objective, required students to "list five things to consider when choosing a job." The percentage of Massachusetts 13-year-olds (41%) who could provide five such things was considerably lower than that in the Nation (59%) and Northeast (63%). There was a similar negative discrepancy among Massachusetts 17-year-olds (63%) as compared to their national (85%) and Northeast (87%) counterparts on this item. By contrast, slightly more Massachusetts students than students in the Northeast region could list three ways (when asked for five) to learn more about a particular job before taking it.

As further evidence of students' weakness in decision-making skills, the Committee considered the relatively low proportions of both age groups who could match likely career choices to given descriptions of hypothetical individuals (e.g., #94, #96, #97, and #98). The ability to answer such questions correctly was considered to be an indication that students could match interests and abilities to career choice, and the Committee was concerned that many could not do so. It was also noted with concern that there was considerable variability in the percentage of students who could identify, for given occupations, whether or not more or fewer jobs will be available in the next ten years (items #99-106). As noted earlier, students' awareness of economic forecasts and labor market projections was considered to be important and worthy of additional emphasis.

RECOMMENDATIONS

1. Provide more emphasis on career awareness and exploration at the middle school level as a prelude to increased stress on career decision making at the high school level. Specifically:

   a) Assist students in practicing skills required to match interests and abilities to job choice, through such things as role-playing, exercises, etc.

RECOMMENDATIONS (continued)

b) Increase the awareness of career education personnel about such resources as the Bureau of Labor Statistics that may be useful and appropriate to developing students' career decision-making skills.

c) Focus particular attention on the needs of students in urban areas regarding the development of decision-making skills.

Objective IV: Basic Skills

A number of items on the test assessed basic skills in the areas of communications(e.g., resumes, interviews, and writing envelopes), numerical skills (e.g., reading graphs and blueprints), and interpersonal skills (e.g., participating in group discussions). While only a relatively small number of items in these areas could be included on the test, their inclusion as indicators of related student skills was intended to convey the commitment of the Committee to the infusion of career education into academic instruction. The Committee was intent on pointing out that all basic skills are, in fact, career skills and are fundamental to career education goals. In general, they were pleased that both age groups scored relatively well on this objective (73% correct among 13-year-olds and 83% correct among 17-year-olds).

It was encouraging to note that the large majority of both 13-year-olds (89%) and 17-year-olds (95%) could correctly address an envelope as instructed. However, on this and a number of other communications items assessing skills related to being interviewed (items #66-69 and #74), female students at both age levels outperformed their male counterparts. The differences in percentage of each group answering correctly ranged from 3-15%, with females consistently outperforming males.

By contrast, males tended to outperform females in both age groups on items assessing numerical skills. More males than females could read the length of a line segment on a blueprint (items #81 and #82) and calculate square footage of a room given dimensions on a blueprint (item #83). These differences ranged from 6% to 12%. Further, the Committee noted with some alarm that a very low percentage of Massachusetts students (23% of 13-year-

olds and 35% of 17-year-olds) could calculate square footage, and that these proportions were lower than those in the Nation and Northeast.

RECOMMENDATIONS

1. Increase general awareness that:

   a) all basic skills (language, communications, numerical, interpersonal), are, in fact, career education skills.

   b) diagnosis of students' basic skills is not only important but necessary in order that emerging strengths and weaknesses can be directly applied to the employment-seeking process.

2. Increase the awareness of all teaching personnel that career education can and must be effectively infused with curricula in all subject areas to supplement and support career education services and programs.

3. Increase the understanding of administrators that remediation of weaknesses in career skills or expansion of career education concepts does not necessarily require more money, time, and resources, but can be addressed by the restructuring or increased coordination of all programs and services to include a career education focus.

4. Address the need to increase the communications and interpersonal skills of males in particular, and the mathematics skills of females in particular.

Objective V: Attitudes and Values

The items assessing this objective generally focussed on students' awareness of the activities, attitudes, and values that are likely to contribute to success in the world of work. While a few of these items were somewhat "factual" in nature (e.g., item #62 on the success of a nurse who "gets

along well with others" and item #63 on the success of a nurse who does not "sacrifice speed for accuracy"), the majority of items focused on more value-laden topics such as "doing only what you are told to do" (#113) and "keeping one's mouth shut in order to avoid stirring things up" (#108). The Committee pointed out that responses to the latter items are not justifiably considered "right" or "wrong" but rather simply indications of the extent to which students have developed attitudes that tend to be characteristic of successful and productive workers.

It was of particular interest to the Committee that, across the items for this objective, a relatively lower percentage of both age groups saw the importance to success of such things as "offering new ideas in connection with one's job" (item #65), "taking responsibility for one's own behavior" (item #25), and taking initiative rather than "doing only what one is told to do" (item #113). It was concluded that, while jobs vary considerably in the extent to which they provide opportunities for initiative, for example, students should be made aware of those attitudes and values that would be regarded favorably by employers.

Discussion of results for this objective along with those for selected student questionnaire variables (discussed below) led the Committee to make the following recommendation.

RECOMMENDATIONS

1. Conduct sophisticated research which explores in-depth the attitudes and perceptions of students regarding such things as their feelings about work and its importance, about the relationship of education to work, and about the nature of factors which influence their expectations, aspirations, and decisions.

Career Guidance

While the large majority of 13- and 17-year-olds reported that they have talked with friends and parents about personal career plans, a substantial proportion have never discussed such plans with either guidance counselors (75% of 13-year-olds and 38% of 17-year-olds), teachers (84% of 13-year-olds and 61% of 17-year-olds) or a person in a career of interest to them (65% of 13-year-olds and 50% of 17-year-olds). Further, among 13- and 17-

year-olds, only 27% have spoken with a counselor about career plans "several times" in the last year. The Committee expressed concern that students may not be offered or may not be taking adequate opportunity to interact with qualified professionals. The fact that those students who have talked with professionals (and those who have done so more frequently) tended to outperform other students pointed to the importance of such interactions.

In addition, while 53% of 13-year-olds and 37% of 17-year-olds reported "never" having taken a test to help them decide on career plans, the Committee was even more concerned that 23% and 12% respectively "don't know" if they have even taken such a test. These and the foregoing results led the Committee to a discussion of the amount of counselors' time that is often consumed by the need to attend to behavioral or disciplinary problems. The Committee urged an increased focus on providing counselors with adequate time and resources to concentrate on career-related guidance.

RECOMMENDATIONS

1. Invite and encourage both 13- and 17-year-olds to discuss career plans with professional staff and not to restrict such discussions to peers and parents.

2. Ensure that all students are provided with guidance regarding the matching of their own goals, interests, and abilities with career choice, by using group guidance techniques where possible to optimize the use of counselors' time.

3. Expand the informal teacher guidance role to take full advantage of teacher-student interactions that could include exploration of career plans and directions.

4. Ensure that when career tests or interests inventories are administered to students for purposes of individual career planning and guidance:

   a) the goals, purpose and usefulness of the test are explained to them.

   b) the results and meanings of the results are transmitted and explained to them.

Field Experience

STUDENTS' FIELD EXPERIENCE. The Committee considered student questionnaire responses that reflected the extent to which students have had the opportunity to participate in career-related out-of-school experiences. They noted that 85-89% of both age groups reported that field trips sponsored by their schools have been useful to them. This finding was evaluated against the perception that administrators are frequently reluctant to allocate funds for such activities, perhaps due to a sensitivity to the restricted resources available and a lack of understanding of the value of these activities. It was agreed that field trips offered the opportunity for both intended and peripheral learning to occur and that students' perceptions should be considered evidence of their value.

There was also concern over the fact that 70% of 17-year-olds have "never" done any volunteer work in a career of interest to them and that only 18% (28% in "Big Cities") have ever participated in a work-study program. Further, those students who have participated in work-study programs tended to perform less well than other students. The Committee was therefore concerned about the limited availability of work-study experiences and about the typical restriction in the types of students who are assigned to these programs. There was consensus that these programs should be viewed as affording valuable field experience and should not be restricted to students demonstrating financial need. In the context of current or potentially expanded work-study programs, a need was seen to strengthen the relationship between the work to which students are assigned and in-school academic pursuits.

TEACHERS' FIELD EXPERIENCE. While not keyed to specific assessment results, the issue of field experience for teachers and counselors emerged several times during Committee discussions. In some depth, the Committee considered the challenge to professionals to adequately prepare students to enter the world of work, to be sensitive to the needs of potential employers, and to help familiarize students with the requirements of various work environments. The Committee reiterated several times the benefits to be accrued through increased interaction between business and industry personnel and counseling and teaching staffs.

RECOMMENDATIONS

1. Provide students with more field experience and exposure to the world of work in the interest of encouraging career awareness and exploration connected to sources outside of the school. Specifically:

   a) Expand work-study programs, cooperative and distributive education programs, and flexible scheduling to include more students from a broader range of backgrounds and needs.

   b) Attempt to provide for more coordination between these programs and in-school academic experiences.

   c) Encourage school committees to explore with their professionals the educational worth of field trips in order to increase their awareness of the value of and their commitment to funding such trips.

2. Encourage business, industry, government and human services organizations to cooperate with educational institutions in order to provide teachers with opportunities to become more familiar with non-teaching occupations. Specifically:

   a) Increase the extent to which business and industry personnel are invited into the schools to make presentations to students on the characteristics of various jobs and job environments.

   b) Encourage teachers to visit major businesses and industries in the local area to increase their awareness of these work environments.

3. Seek acknowledgment from school personnel that career education is more than an in-school activity and that schools should take the responsibility for orchestrating the educational *environment* for students.

Student and Parent Attitudes

STUDENT ATTITUDES. According to student questionnaire results, only 10-16% of students at both age levels "dislike" or "strongly dislike" school and the Committee was pleasantly surprised at the large majority who "like it," "like it a lot," or think "it's okay." By contrast, 68% of 13-year-olds and 60% of 17-year-olds reported that their school experience has been "not very" or only "somewhat" useful to them in helping them to fulfill their career objectives. While the Committee felt that these percentages may be inflated by those students having a poor attitude toward school *in general* and were, therefore, not responding to this question in particular, they were nevertheless concerned about the high percentages.

Further, students whose principals rated general student attitude in the school as "excellent" or "good" outperformed those whose principals rated it as "fair" or "poor." Statewide, 69-70% of the principals rated student attitudes in the top two categories, but the porportion of such high ratings was higher in "Residential Suburbs" and lower in "Big Cities" and "Industrial Suburbs." While the Committee recognized the complex relationship between attitudes and achievement, as well as the caution against drawing simple cause-effect inferences, they felt that a reminder regarding the importance of addressing student attitudes on an individual basis was justifiable.

PARENTAL ATTITUDES AND INVOLVEMENT. Because 61% of 13-year-olds and 48% of 17-year-olds said their parents are involved in their school work "quite a bit" or "a lot" and because these students tended to outperform those whose parents are reported involved "hardly at all," the Committee was very concerned about those parents who display low levels of involvement. The importance of parental attitudes and involvement was further substantiated by the fact that students who described their parents as wanting them to continue their schooling after high school "quite a bit" or "a lot" outperformed those who reported weaker parental encouragement, and the fact that students whose principals perceived parental support of the school to be "excellent" or "good" outperformed those whose principals rated such support as "fair" or "poor."

Special concern was voiced over the responses to these questions from students and principals in "Big Cities" and "Industrial Suburbs" in particular. In comparison to statewide results, a smaller proportion of students reported their parents as strongly encouraging them to attend college and a smaller proportion of principals rated students' attitudes as "excellent" or "good." By contrast, the proportions were higher in "Residential Suburbs."

RECOMMENDATIONS

1. Convey to parents and the local community that students' general attitudes appear to be more positive than some might expect.

2. More fully integrate in classroom instruction a focus on the relevance of educational excellence in general, and subject matter knowledge in particular, to career planning.

3. Explore with students their feelings about the relevancy or irrelevancy of schooling to career development in order to determine possible directions for action.

4. Increase the effort to involve parents in students' school activities and work, and attempt, where possible, to raise their awareness of the relationship between parental expectations and attitudes and student attitudes and achievement.

Current Program Enrollment

According to student reports, 53% of 17-year-olds statewide are enrolled in college-bound programs, 12% in vocational programs, and 13% in business programs. However, in "Big Cities" and "Industrial Suburbs" only 23% and 29%, respectively, are presently in college-bound programs. As noted in a later discussion, job aspirations of students in "Big Cities" and "Industrial Suburbs" do not differ from those of students statewide despite the differing program enrollment figures, and the Committee wondered whether or not these students are exploring job possibilities other than those which require college degrees.

Particular note was taken of the fact that those students enrolled in college-bound programs tend to outperform other students, while those in vocational programs tend to perform less well (with "general" and "business" students scoring in the middle and about the same). It was the Committee's conclusion that special attention should be given to vocational students in order to insure that, by comparison with the programs of other students, theirs includes as broad a perspective in career awareness and preparation.

One of the more interesting findings of the assessment was that the achievement of vocational students enrolled in Regional Vocational-Technical High Schools was identical to that of students enrolled in vocational programs in comprehensive or academic high schools. These data were considered to help substantiate the fact that career education can be effectively provided in a variety of settings in a variety of ways. The Committee wished to extend a vote of confidence to those vocational high schools which are providing general career education services through such things as one-year exploratory programs and which are not restricting students to technical training with a limited focus.

RECOMMENDATIONS

1. Analyze vocational programs in all school settings to ensure that students enrolled receive comparably broad preparation in career awareness and preparation.

2. Encourage vocational high schools to maintain or implement one-year exploratory programs that include career awareness and decision-making experiences.

Student Aspirations

EDUCATIONAL ASPIRATIONS. It was noted with some interest that students' aspirations regarding post-secondary education appeared to remain fairly constant from the 13- to the 17-year-old level; 41% of both age groups plan to go to four-year college, 3-9% plan on two-year college, and 11-13% plan on "additional special training" (e.g., business, nursing, or technical school). However, 31% of 13-year-olds and 18% of 17-year-olds indicated that they "don't know" their future educational plans. As further substantiation of differences between kinds of communities, it was noted that 52% of 13-year-olds and 57% of 17-year-olds in "Residential Suburbs" plan on attending four-year college, as compared to 41% of both age groups statewide. Moreover, students of both ages who plan on attending four-year-college performed highest, while 13-year-olds who plan on combining "job and school" and 17-year-olds who plan on a "full-time job" performed least well.

JOB ASPIRATIONS. When asked to identify the list of job titles that included a job they would like to have in the future, 55% of 17-year-olds indicated that they would like to have a job which could be described as "high status" (about the same percentage that are currently enrolled in college-bound programs); 32% want what might be called "medium status" jobs, and very few (10%) aspire to "low status" jobs.

Considerable discussion focused in particular on the percentage of students in different kinds of communities who aspire to "high status" jobs. As compared to statewide statistics, a smaller proportion (44%) in "Industrial Suburbs" and a larger proportion (58%) in "Big Cities" aspire to such jobs. It appears that in "Industrial Suburbs" a larger proportion (46%) of students aspire to "medium status" jobs. The Committee surmised that students in "Big Cities" might be described as less "realistic" in their job aspirations since a higher proportion want "high status" jobs while a lower proportion are enrolled in college-bound programs. On the other hand, students in "Industrial Suburbs" may be more aware of economic constraints in their local area or develop job expectations according to what they perceive as available in the local community. Despite these conjectures, some "realism" must be operating since those students who desire "high status" jobs substantially outperform those who aspire to "low status" jobs.

It was also noted that, to a large degree, students' job aspirations are often correlated with their parents' current occupational level and with the extent to which their parents encourage college attendance. These findings were viewed as further substantiation of the importance of parental expectations in students' career decision-making. However, because 32-35% of both age groups reported that they are "very sure" about the kind of job they would like to have in the future, 43-46% are "somewhat sure" and only 22% are "not very sure," the Committee was impressed that students are at least thinking about the kind of job they would like to have in the future.

RECOMMENDATIONS

1. Address students' needs for more valid information about the job market and labor market statistics in particular, and emphasize the importance of developing realistic awareness of the opportunities available.
2. Increase the emphasis on helping students to assess their strengths and weaknesses in aptitude and to match their potential with jobs available in the marketplace.

RECOMMENDATIONS (continued)

3. Encourage students to explore career opportunities as soon as they are ready to do so and pay particular attention to those high school students who, when approaching graduation, are still not sure about job or school plans.

4. Increase students' awareness of the value of two-year college and technical schools in providing technical training of many kinds that can increase employability and the range and quality of jobs open to them.

5. Provide teachers and counselors with more in-service training in order to enable them to provide accurate information on the labor market and assist students in identifying reasonable career choices available to them.

General Recommendations

In summary, the Committee proposed the following general recommendations regarding Career Education programs and assessment.

RECOMMENDATIONS

1. The Massachusetts Department of Education should assume a leadership role in encouraging strong, sequenced, and coordinated K-12 career education programs.

2. The Division of Occupational Education should refrain from directing funds exclusively to the high school level, but rather, include elementary and middle schools as recipients of discretionary funds.

RECOMMENDATIONS (continued)

3. In future assessment years, take every opportunity to increase local school district awareness of the validity and usefulness of the local assessment option. Specifically, the Department should:

   a) Ensure that information about the option is disseminated early to allow for adequate time for budget allocations.

   b) Ensure that information about the option reaches Principals and Coordinators (in addition to Superintendents) such that, where interest exists, Superintendents can be encouraged by staff to adopt the option.

   c) Allow local option data to be used to support applications for Department discretionary funds.

   d) Specify in more detail the potential uses of or types of questions that can be answered by local option data.

   e) More strongly enlist the support of Regional Center staff to "spread the word" about the local option opportunity.

APPENDIX A

Identification of Region and Kind of Community for Massachusetts School Districts

TABLE 10

Identification of Region* and Kind of Community** for Massachusetts School Districts

School System	Region	KOC	School System	Region	KOC
Local Public Schools					
Abington	4	3	Bourne Union 10	4	4
Acton	2	3	Boxborough Union 42	2	4
Acushnet	4	4	Boxford Union 58	2	3
Agawam	5	4	Boylston Union 60	6	3
Amesbury	2	4	Braintree	1	3
Amherst Union 26	5	3	Brewster Union 54	4	4
Andover	2	3	Bridgewater	4	4
Arlington	1	3	Brimfield Union 61	6	4
Ashburnham Union 56	6	4	Brockton	4	1
Ashfield Union 65	3	4	Brookfield Union 61	6	4
Ashland	6	3	Brookline	1	3
Athol	6	4	Burlington	2	3
Attleboro	4	4	Cambridge	1	2
Auburn	6	2	Canton	1	3
Avon	1	3	Carlisle	2	3
Ayer	2	4	Carver Union 62	4	4
Barnstable	4	4	Chatham	4	4
Barre Union 63	6	4	Chelmsford	2	3
Bedford	2	3	Chelsea	1	2
Belchertown	5	4	Chesterfield Union 66	3	4
Bellingham	6	4	Chicopee	5	1
Belmont	1	3	Chilmark Union 19	4	4
Berkley Union 37	4	4	Clarksburg Union 43	3	4
Berlin Union 60	6	4	Clinton	6	4
Bernardston Union 18	3	4	Cohasset	1	3
Beverly	2	3	Concord	1	3
Billerica	2	4	Conway Union 38	3	4
Blackstone Union 44	6	4	Danvers	2	3
Bolton Union 47	6	4	Dartmouth	4	4
Boston	1	1	Dedham	1	3
Deerfield Union 18	3	4	Greenfield	3	4
Dennis Union 11	4	4	Groton Union 46	2	3
Dighton Union 37	4	4	Groveland Union 53	2	4
Douglas	6	4	Hadley	5	4
Dover Union 50	6	3	Halifax Union 31	4	4
Dracut	2	4	Hamilton Union 57	2	3
Dunstable Union 46	2	4	Hampden	5	4
Duxbury	4	3	Hancock Union 69	3	4
East Bridgewater	4	4	Hanover	4	3
East Brookfield Union 7	6	4	Hanson	4	4
Eastham Union 54	4	4	Hardwick Union 63	6	4
Easthampton	5	2	Harvard	6	4
East Longmeadow	5	3	Harwich	4	4
Easton	4	3	Hatfield	5	4
Edgartown Union 19	4	4	Haverhill	2	1
Erving Union 28	6	4	Hingham	1	3
Essex Union 48	2	4	Holbrook	1	3
Everett	1	2	Holden Union 64	6	3
Fairhaven	4	4	Holland Union 61	6	4
Fall River	4	1	Holliston	6	3
Falmouth	4	4	Holyoke	5	1
Fitchburg	6	1	Hopedale	6	4
Florida Union 43	3	4	Hopkinton	6	3
Foxborough	4	3	Hubbardston Union 63	6	4
Framingham	6	3	Hudson	6	3
Franklin	6	4	Hull	4	3
Freetown Union 34	4	4	Ipswich	2	4
Gardner	6	4	Kingston Union 31	4	4
Georgetown	2	4	Lakeville Union 34	4	4
Gill Union 18	3	4	Lancaster	6	4
Gloucester	2	4	Lanesborough Union 69	3	4
Goshen Union 66	3	4	Lawrence	2	1
Gosnold Union 37	4	4	Lee Union 29	3	2
Grafton	6	3	Leicester	6	4
Granby	5	4	Lenox	3	4
Granville Union 39	3	4	Leominster	6	1

* Region Definitions: 1 = Boston Region; 2 = Northeast Region; 3 = Pittsfield Region; 4 = Southeast Region; 5 = Springfield Region; 6 = Central Mass. Region

** KOC Definitions: 1 = Big city; 2 = Industrial suburb; 3 = Residential suburb; 4 = Other

TABLE 10 (continued)

School System	Region	KOC
Leverett Union 28	5	4
Lexington	1	3
Leyden Union 18	3	4
Lincoln	1	3
Littleton	2	3
Longmeadow	5	3
Lowell	2	1
Ludlow	5	4
Lunenburg	6	4
Lynn	2	2
Lynnfield	2	3
Malden	1	2
Manchester Union 48	2	3
Mansfield	4	4
Marblehead	2	3
Marion Union 55	4	4
Marlborough	6	4
Marshfield	4	3
Mashpee Union 10	4	4
Mattapoisett Union 55	4	4
Maynard	2	4
Medfield	6	3
Medford	1	2
Medway	6	4
Melrose	1	3
Merrimac Union 53	2	4
Methuen	2	4
Middleborough	4	4
Middleton	2	3
Milford	6	4
Millbury	6	2
Millis	6	3
Millville Union 44	6	4
Milton	1	3
Monroe Union 43	3	4
Monson	5	2
Montague	3	4
Nahant	2	3
Nantucket	4	4
Natick	6	3
Needham	1	3
New Bedford	4	1
New Braintree Union 12	6	4
Newbury Union 68	2	3
Newburyport	2	4
New Salem Union 28	6	4
Newton	1	3
Norfolk	4	3
North Adams	3	4
Northampton	5	4
North Andover	2	3
North Attleborough	4	4
Northborough Union 3	6	3
Northbridge	6	4
North Brookfield Union	6	4
Northfield Union 18	3	4
North Reading	2	3
Norton	4	4
Norwell	4	3
Norwood	1	3
Oak Bluffs Union 19	4	4
Oakham Union 63	6	4
Orange	6	4
Orleans Union 54	4	4
Otis Union 29	3	4
Oxford	6	4
Palmer	5	4
Paxton Union 64	6	3
Peabody	2	2
Pelham Union 26	5	4
Pembroke Union 31	4	3
Petersham	6	4
Phillipston Union 1	6	4
Pittsfield	3	1
Plainville	4	4
Plymouth Union 62	4	4
Plympton Union 31	4	4
Princeton Union 64	6	4
Provincetown Union 14	4	4
Quincy	1	2
Randolph	1	3
Raynham	4	3
Reading	2	3
Rehoboth Union 37	4	4
Revere	1	2
Richmond Union 69	3	4
Rochester Union 55	4	4
Rockland	4	3
Rockport	2	3
Rowe Union 65	3	4
Rowley Union 68	2	4
Royalston Union 1	6	4
Rutland Union 64	6	4
Salem	2	2
Salisbury Union 68	2	4
Sandisfield Union 39	3	4
Sandwich Union 10	4	4
Saugus	2	3
Savoy Union 43	3	4
Scituate	4	3
Seekonk	4	3
Sharon	1	3
Sherborn Union 50	6	3
Shirley Union 42	2	4
Shrewsbury	6	3
Shutesbury Union 28	5	4
Somerset	4	4
Somerville	1	2
Southampton Union 66	3	4
Southborough Union 3	6	3
Southbridge	6	4
South Hadley	5	4
Southwick Union 39	3	4
Spencer	6	4
Springfield	5	1
Sterling Union 64	6	4
Stoneham	2	3
Stoughton	4	4
Stow Union 47	6	3
Sturbirdge Union 61	6	3
Sudbury	1	3
Sunderland Union 38	3	4
Sutton	6	4
Swampscott	2	3
Swansea	4	4
Taunton	4	4
Templeton Union 1	6	3
Tewksbury	2	3
Tisbury Union 19	4	4
Topsfield Union 58	2	3
Truro Union 14	4	4
Tyngsborough	2	4
Tyringham Union 29	3	4
Uxbridge	6	4
Wakefield	2	3
Wales Union 61	6	4
Walpole	1	3
Waltham	1	2
Ware	5	4
Wareham	4	4
Warren Union 12	6	2
Warwick Union 18	3	4
Watertown	1	2
Wayland	1	3

TABLE 10 (continued)

School System	Region	KOC
Webster	6	4
Wellesley	1	3
Wellfleet Union 54	4	4
Wendell Union 28	6	4
Wenham Union 57	2	3
Westborough	6	3
West Boylston	6	3
West Bridgewater	4	4
West Brookfield Union 12	6	4
Westfield	5	4
Westford	2	3
Westhampton Union 66	3	4
Westminster Union 56	6	4
West Newbury Union 53	2	4
Weston	1	3
Westport	4	4
West Springfield	5	4
West Tisbury Union 19	4	4
Westwood	1	3
Weymouth	1	3
Whately Union 38	3	4
Whitman	4	4
Wilbraham	5	3
Williamsburg Union 66	3	4
Williamstown	3	3
Wilmington	2	3
Winchendon	6	4
Winchester	2	3
Winthrop	1	3
Woburn	2	3
Worcester	6	1
Wrentham	4	3
Yarmouth Union 11	4	4

Academic Regional Schools

School System	Region	KOC
Acton-Boxborough	2	3
Adams-Cheshire	3	4
Amherst-Pelham	5	3
Ashburnham-Westminster	6	4
Athol-Royalston	6	4
Berkshire Hills	3	4
Berlin-Boylston	6	3
Blackstone-Millville	6	4
Bridgewater-Raynham	4	4
Buckland-Shelburne	3	4
Central Berkshire	3	3
Concord-Carlisle	1	3
Dennis-Yarmouth	4	4
Dighton-Rehoboth	4	4
Dover-Sherborn	6	3
Dudley-Charlton	6	4
Freetown-Lakeville	4	4
Frontier	3	4
Gateway	3	4
Gill-Montague	3	4
Groton-Dunstable	2	3
Hamilton-Wenham	2	3
Hampden-Wilbraham	5	3
Hampshire	3	4
Hawlemont	3	4
King Philip	4	3
Lincoln-Sudbury	1	3
Martha's Vineyard	4	4
Masconomet	2	3
Mendon-Upton	6	4
Mount Greylock	3	4
Mohawk Trail	3	4
Narragansett	6	3
Nashoba	6	4
Nauset	4	4
New Salem-Wendell	6	4
Northboro-Southboro	6	3
North Middlesex	2	4
Old Rochester	4	4
Pentucket	2	3
Pioneer Valley	3	4
Plymouth-Carver	4	4
Quabbin	6	4
Ralph C. Mahar	6	4
Silver Lake	4	3
Southern Berkshire	3	4
Spencer-East Brookfield	6	4
Tantasqua	6	4
Triton	2	4
Wachusett	6	3
Warren-West Brookfield	6	2
Whitman-Hanson	4	4

Vocational-Technical Regional Schools

School System	Region	KOC
Assabet Valley	6	3
Blackstone Valley Reg	6	4
Blue Hills Voc	1	3
Bristol-Plymouth Voc-Tech	4	4
Cape Cod Reg Voc	4	4
Franklin County	3	4
Greater Fall River	4	1
Greater Lawrence	2	1
Greater Lowell Voc-Tech	2	4
Greater New Bedford Voc-Tech	4	1
South Middlesex Voc-Tech Reg	6	3
Minuteman Voc-Tech	2	3
Montachusett Voc-Tech	6	4
Northern Berkshire Voc	3	4
Nashoba Valley Tech	2	3
Northeast Metro Voc	2	3
North Shore Reg Voc	2	3
Old Colony Reg Voc	4	4
Pathfinder Voc-Tech	6	4
Shawsheen Valley Voc-Tech	2	3
Southeastern	4	1
South Shore Voc-Tech	4	3
South Worcester County Voc	6	4
Tri County Reg Voc-Tech	6	4
Upper Cape Cod Voc-Tech	4	4
Whittier Voc	2	4

APPENDIX B

Item Results by Reporting Group

This appendix contains tables displaying the results for each item administered to students at each level.

The two tables presented here provide the following information for each test item:

- the number of the test question as it appeared in the test booklet
- a brief description of the test item
- the percentage of all students in the age group answering correctly
- the percentage answering correctly in each of the Massachusetts reporting groups defined by the variables: sex of student, region, and kind of community
- where the question was tested by NAEP, the percentage of students in the Nation and in the Northeast answering correctly
- where data is available, the percentage of Massachusetts 17-year-olds answering correctly during the 1974-75 assessment

Tables 11 and 12 present this information for 13- and 17-year-olds, respectively. Because the test was the same for both age levels, the reader can compare the achievement of the two age groups by referring to identical item numbers on Tables 11 and 12.

TABLE 11

Test Item Performance of Massachusetts 13-Year-Olds by Reporting Group

Item #	Description of Item	Percentage of Students Answering Correctly														
		Massachusetts													NAEP	
		All	Sex		Region						Kind of Community				Nation	Northeast
			M	F	1	2	3	4	5	6	1	2	3	4		
	OBJECTIVE 1															
5*	I operate machine tools, repair metal parts, etc. What am I?	11	13	9	6	14	10	12	13	14	8	8	13	13	3	4
6*	I design buildings and organize construction. What am I?	71	69	74	73	70	75	70	72	70	59	79	75	70	45	53
7*	I receive and pay out money and keep bank records. What am I?	52	54	50	54	52	55	46	49	53	47	50	56	50	51	60
8	Which person usually earns the most money?	56	64	49	56	57	48	58	52	58	55	55	58	55	37	44
9	Which person usually earns the most money?	46	41	51	46	47	48	45	42	48	47	48	45	46	50	54
10	Which of these jobs requires heavy lifting and bending?	82	83	82	80	84	81	83	81	84	78	83	84	83	86	86
14	In which vocational area does a BARBER belong?	44	45	43	49	41	52	39	46	40	49	45	44	38		
15	In which vocational area does an AUTO MECHANIC belong?	70	67	73	66	70	73	69	71	78	70	65	71	73		
16	In which vocational area does a STORE CLERK belong?	91	90	91	90	90	93	91	89	93	87	90	92	91		
17	In which vocational area does a PHYSICAL THERAPIST belong?	87	85	88	86	87	91	86	83	90	83	87	89	86		
18	In which vocational area does a TV REPAIRPERSON belong?	71	68	74	67	73	73	72	72	74	65	69	73	75		
19	In which vocational area does an INSURANCE AGENT belong?	70	71	69	68	68	70	73	67	75	66	66	74	70		

* Open-ended item.

TABLE 11 (continued)

Item #	Description of Item	Percentage of Students Answering Correctly														
		Massachusetts													NAEP	
		All	Sex		Region						Kind of Community				Nation	Northeast
			M	F	1	2	3	4	5	6	1	2	3	4		
	OBJECTIVE 1 (continued)															
20	In which vocational area does a PRINTER belong?	70	68	73	71	66	77	73	67	72	73	71	69	70		
21	In which vocational area does a DENTAL ASSISTANT belong?	79	74	83	80	77	80	78	77	80	76	78	79	80		
22	In which vocational area does a REAL ESTATE BROKER belong?	80	83	77	78	80	82	81	75	82	74	78	81	82		
23	In which vocational area does a NUTRITIONIST belong?	91	90	93	90	92	92	92	91	92	86	91	94	92		
24	In which vocational area does a FURNITURE MAKER belong?	86	86	86	85	84	89	90	86	85	81	86	87	88		
39	Which job requires the least supervision of other workers?	39	37	41	36	40	43	40	43	37	37	41	39	39		
40	Which job requires the most supervision of other workers?	28	34	24	31	30	22	25	23	30	28	26	32	25		
41	Which job would allow the most independence?	23	20	26	23	22	21	23	29	23	31	22	20	23		
56	Which occupation would have the highest salary?	22	25	20	24	24	21	23	14	21	22	18	25	20		
	OBJECTIVE 2															
11	Which one of the following jobs requires good color vision?	87	87	88	87	87	86	88	84	89	81	88	90	88	84	86
12	For which job is good eyesight important?	86	88	84	86	87	83	84	82	88	80	87	90	84	86	90
13	For which job is it important to work fast with your fingers?	92	91	94	92	94	95	93	93	92	90	92	94	93	94	94
27	What kind of training is needed to be a WAITRESS/WAITER?	79	79	79	79	80	86	76	83	78	76	77	83	79		
28	What kind of training is needed to be a GLASS BLOWER?	51	49	52	51	53	51	46	54	51	38	51	56	52		

TABLE 11 (continued)

Item #	Description of Item	Percentage of Students Answering Correctly														
		Massachusetts													NAEP	
		All	Sex		Region						Kind of Community				Nation	Northeast
			M	F	1	2	3	4	5	6	1	2	3	4		
	OBJECTIVE 2 (continued)															
29	What kind of training is needed to be a HOSPITAL ATTENDANT?	11	12	10	13	11	9	10	9	12	12	14	11	8		
30	What kind of training is needed to be a SOCIAL WORKER?	53	49	56	56	52	53	51	53	51	51	58	54	50		
31	What kind of training is needed to be a REFRIGERATION MECHANIC?	66	68	65	65	69	60	71	54	68	57	69	69	67		
32	What kind of training is needed to be a BLACKSMITH?	59	57	60	63	54	56	59	59	58	49	59	64	58		
33	What kind of training is needed to be a PHARMACIST?	66	69	63	62	66	65	69	67	65	57	67	68	67		
34	What kind of training is needed to be an AUTOMOBILE SALESMAN?	43	42	44	46	44	44	39	42	41	36	47	47	39		
35	What kind of training is needed to be an ENGINEER?	44	43	45	42	43	52	41	49	48	42	43	46	44		
36	Which job requires the longest period of training?	53	52	54	56	58	41	48	46	53	46	54	60	47		
37	Which job requires the longest period of training?	64	59	69	69	71	57	59	59	59	59	67	71	56		
38	Which job requires the longest period of training?	48	41	54	48	51	48	48	46	45	40	46	52	49		
42	A RADIO ANNOUNCER has which of these eight characteristics?	77	76	78	78	79	82	77	67	76	70	75	85	72		
43	A POLICE OFFICER has which of these eight characteristics?	41	35	45	39	40	43	41	42	43	30	39	46	42		
44	A SECRETARY has which of these eight characteristics?	40	41	39	41	41	38	40	37	39	37	38	43	38		
45	A BUTCHER has which of these eight characteristics?	70	65	74	70	71	72	71	63	70	64	74	72	69		
46	A BUS DRIVER has which of these eight characteristics?	34	33	35	31	34	37	36	36	37	23	36	39	36		

TABLE 11 (continued)

Item #	Description of Item	Percentage of Students Answering Correctly															
		Massachusetts													NAEP		
		All	Sex		Region						Kind of Community				Nation	Northeast	
			M	F	1	2	3	4	5	6	1	2	3	4			
	OBJECTIVE 2 (continued)																
47	A TV REPAIRMAN has which of these eight characteristics?	40	38	42	40	38	44	41	45	40	34	44	41	40			
48	A RECEPTIONIST has which of these eight characteristics?	26	25	27	25	27	27	25	29	27	20	29	30	24			
49	A DRAFTSPERSON has which of these eight characteristics?	26	25	27	28	28	24	24	19	27	24	25	29	23			
54	The program described will prepare John to be:	26	26	25	28	29	19	24	20	23	24	24	30	20			
55	To prepare for being a police officer, Sue should:	73	68	76	72	72	77	73	68	75	65	73	78	70			
84	What level of math does being a SALES CLERK require?	79	82	77	79	78	86	78	80	80	71	77	83	80			
85	What level of math does being an ELECTRICIAN require?	37	38	36	38	39	31	37	35	35	38	36	39	33			
86	What level of math does being an ENGINEER require?	68	69	67	65	66	70	69	70	73	60	68	73	67			
87	What level of math does being a BANK TELLER require?	48	50	47	48	44	52	51	48	50	46	41	52	48			
88	What level of math does being a METEOROLOGIST require?	70	73	67	71	66	76	73	68	69	63	75	69	74			
	OBJECTIVE 3																
4*	List five things to consider when choosing a career.**	41	41	42	47	40	38	45	23	39	33	40	49	36	59	63	
26*	List five ways to learn more about a job before taking it.**	48	42	54	44	53	44	51	42	49	34	46	55	50	32	42	
50	Does Diane have enough skill to continue with cabinet making?	42	43	40	44	37	43	43	43	41	36	39	48	39			
51	Should Warren become a merchant seaman?	74	68	79	73	74	81	73	72	76	67	72	78	74			

** Mastery Criteria: Item #4 = 5 of 5 correct; Item #26 = 3 of 5 correct.

TABLE 11 (continued)

Item #	Description of Item	Percentage of Students Answering Correctly															
		Massachusetts													NAEP		
		All	Sex		Region						Kind of Community				Nation	Northeast	
			M	F	1	2	3	4	5	6	1	2	3	4			
	OBJECTIVE 3 (continued)																
52	In this situation, what should Elaine do?	37	32	41	34	35	40	36	39	41	29	40	37	41			
53	In this situation, what should Max do?	41	37	45	40	40	45	44	43	40	30	42	46	43			
57	By talking with a qualified person, you could learn about your expected salary. T or F?	78	80	77	78	78	76	78	77	81	75	78	81	77			
58	By talking with a qualified person, you could learn about useful school courses. T or F?	87	84	89	84	87	91	86	91	88	79	89	90	86			
59	By talking with a qualified person, you could learn about necessary skills. T or F?	79	77	81	78	80	84	76	81	82	69	81	85	77			
60	By talking with a qualified person, you would know your future co-workers. T or F?	69	65	72	67	68	77	69	72	70	61	70	71	72			
61	By talking with a qualified person, you could learn about advancement chances. T or F?	70	69	70	68	69	69	70	69	73	64	69	72	71			
75	Which is an Equal Opportunity Employer not expected to do?	62	57	66	59	64	63	57	62	68	53	69	64	62			
76	All of the following are fringe benefits except:	50	55	47	52	49	54	49	47	53	42	54	54	50			
77	Which one of the following is a Social Security benefit?	74	75	73	76	74	75	71	73	75	67	76	78	72			
94	Risa's career plans might include such jobs as:	36	38	35	32	32	44	41	37	42	32	32	39	38			
95	Linda's career plans might include such jobs as:	59	57	61	57	61	58	58	57	62	48	58	65	60			
96	Fred's career plans might include such jobs as:	35	34	36	36	35	36	34	31	35	37	39	33	34			

TABLE 11 (continued)

Item #	Description of Item	Percentage of Students Answering Correctly														
		Massachusetts													NAEP	
		All	Sex		Region						Kind of Community				Nation	Northeast
			M	F	1	2	3	4	5	6	1	2	3	4		
	OBJECTIVE 3 (continued)															
97	Which job matches Karen's interests and abilities?	29	30	27	30	29	22	27	28	30	22	28	33	27		
98	Tom's post-high-school plans should include:	35	37	34	34	33	39	38	31	37	29	36	38	36		
99	In 10 years, will we need more or fewer MATHEMATICIANS?	53	53	53	51	54	57	55	52	53	54	49	55	52		
100	In 10 years, will we need more or fewer FORESTERS?	46	48	44	43	44	53	46	52	50	39	51	45	50		
101	In 10 years, will we need more or fewer BUSINESS MACHINE REPAIRPERSONS?	67	67	68	67	66	65	72	59	69	62	70	70	66		
102	In 10 years, will we need more or fewer ELEMENTARY TEACHERS?	48	45	50	48	50	48	46	47	48	41	53	51	46		
103	In 10 years, will we need more or fewer COMPUTER PROGRAMMERS?	74	76	72	73	68	79	79	72	77	64	72	77	79		
104	In 10 years, will we need more or fewer LAB TECHNICIANS?	70	69	71	67	68	75	71	69	75	62	74	72	72		
105	In 10 years, will we need more or fewer ELECTRICAL ENGINEERS?	69	69	68	69	65	73	71	65	71	60	73	71	69		
106	In 10 years, will we need more or fewer SECRETARIES?	31	30	32	29	32	29	37	25	29	36	27	31	30		
	OBJECTIVE 4															
1	A job resume is:	24	23	24	28	22	24	20	24	23	21	30	27	17		
2	What should you do about the mistakes Ted has made?	76	71	80	75	76	74	76	77	77	68	76	78	78		
3	Whom should you tell about the lack of safety equipment?	66	68	65	65	64	70	67	69	68	65	66	67	66		
66	To have a good job interview, you should be on time. T or F?	89	86	91	86	87	93	91	87	93	85	88	90	91		

TABLE 11 (continued)

Item #	Description of Item	Percentage of Students Answering Correctly														
		Massachusetts													NAEP	
		All	Sex		Region						Kind of Community				Nation	Northeast
			M	F	1	2	3	4	5	6	1	2	3	4		
	OBJECTIVE 4 (continued)															
67	To have a good job interview, you should speak only when asked a question. T or F?	56	52	60	58	57	57	57	56	53	48	60	60	56		
68	To have a good job interview, you should answer the questions accurately. T or F?	90	88	92	89	90	95	89	90	90	82	91	94	90		
69	To have a good job interview, you should show interest in the job. T or F?	90	87	93	89	88	91	91	91	93	86	91	92	91		
74	Which question should you ask first during a job interview?	69	61	76	68	71	76	78	66	70	63	68	73	67		
78*	*Bar Graph*: How many trees were planted on Wednesday?	91	91	90	90	93	91	92	92	88	85	90	94	91	95	97
79*	*Bar Graph*: How many trees were planted on Thursday?	75	74	76	70	74	78	77	78	78	64	77	80	75	80	83
80*	*Bar Graph*: How many trees were planted on Friday?	21	22	21	20	22	28	20	27	20	15	20	26	20	35	40
81*	According to the blueprint, how long is the office at Side X?	63	68	59	60	64	68	62	65	68	45	61	73	64	59	
82*	According to the blueprint, how long is the office at Side Y?	56	60	53	54	57	64	53	58	60	39	57	65	56	58	
81/ 82*	*Percent of students answering Questions 81 AND 82 correctly.*	49	55	43	46	50	53	46	48	54	31	48	59	48	53	62
83*	According to the blueprint, how many square feet of floor space are there in the office?	23	27	21	23	23	25	20	29	25	12	21	31	23	27	34
89A*	On the envelope, write in the return name.	91	86	95	91	90	94	92	89	92	84	92	93	93	94	93
89B*	On the envelope, write in the return street.	91	87	95	91	90	95	93	90	92	84	93	93	94	92	93

TABLE 11 (continued)

Item #	Description of Item	Percentage of Students Answering Correctly														
		Massachusetts													NAEP	
		All	Sex		Region						Kind of Community				Nation	Northeast
			M	F	1	2	3	4	5	6	1	2	3	4		
	OBJECTIVE 4 (continued)															
89C*	On the envelope, write in the return city, state, and zip.	91	87	95	91	90	95	93	89	93	84	93	93	94	92	92
89D*	On the envelope, write in the addressee's name.	94	90	98	93	93	97	96	91	95	87	95	96	96	95	95
89E*	On the envelope, write in the addressee's street.	94	90	98	94	93	97	96	89	96	88	94	96	96	93	95
89F*	On the envelope, write in the addressee's city, state, and zip.	94	90	97	93	93	96	96	89	96	88	94	96	95	93	93
89G*	*Percent of students completing entire envelope correctly.*	89	83	95	89	88	94	90	85	91	81	91	91	92		
90	According to the table, what size socks should you buy if you wear Size 10 shoes?	79	76	81	77	79	80	77	77	82	65	81	85	79	67	70
92	In a phone book, "Jones" would be found between which 2 names?	78	75	80	77	77	81	80	73	79	71	77	82	77		
93	Which would be least worthwhile to discuss at the meeting?	53	51	55	49	54	53	52	50	61	38	48	62	55		
	OBJECTIVE 5															
25	Whose fault was it that Mary did not buy the bread?	30	33	28	29	36	23	29	30	27	22	34	35	26	23	23
62	To be a success, should a nurse get along well with others?	72	71	73	70	71	78	72	73	75	70	71	72	74		
63	To be a success, should a nurse sacrifice speed for accuracy?	84	80	87	82	84	87	84	84	84	74	84	87	86		
64	To be a success, should a nurse change jobs yearly?	89	86	92	88	89	91	90	90	89	83	88	91	90		
65	To be a success, should a nurse offer new ideas?	51	54	49	53	52	51	46	55	52	53	49	53	49		

TABLE 11 (continued)

Item #	Description of Item	Percentage of Students Answering Correctly														
		Massachusetts													NAEP	
		All	Sex		Region						Kind of Community				Nation	Northeast
			M	F	1	2	3	4	5	6	1	2	3	4		
	OBJECTIVE 5 (continued)															
70	To become an accountant, should Lynn enroll in a college math course?	77	76	78	79	75	82	76	80	77	69	78	81	78		
71	To become an accountant, should Lynn express new ideas about her bookkeeping job?	63	61	64	57	62	70	64	67	78	61	65	62	64		
72	To become an accountant, should Lynn make decisions without consulting her boss?	76	73	79	76	73	82	77	79	76	72	79	78	75		
73	To become an accountant, should Lynn be dependable and enthusiastic about her job?	89	86	91	87	88	93	90	86	93	81	88	91	92		
91	In these circumstances, are you responsible for the injury?	73	71	75	73	73	75	73	73	74	64	72	79	72	72	72
107	Is it important for success to always try to improve things?	90	90	90	88	89	93	90	86	93	81	90	94	90		
108	Is it important for success to keep your mouth shut and not stir things up?	49	48	49	48	51	54	47	47	48	40	46	53	49		
109	Is it important for success to learn to do your job better?	92	90	94	90	92	94	93	90	95	83	94	96	93		
110	Is it important for success to get along well with others?	80	80	80	77	81	83	81	78	83	73	80	83	81		
111	Is it important for success to keep quiet about your mistakes?	75	72	77	75	72	76	75	69	79	62	74	81	76		
112	Is it important for success to do work you can be proud of?	80	79	81	79	78	80	84	77	80	75	79	84	78		
113	Is it important for success to do only what you are told?	20	19	20	21	21	18	17	18	19	15	18	26	15		

TABLE 12

Test Item Performance of Massachusetts 17-Year-Olds by Reporting Group

Item #	Description of Item	Percentage of Students Answering Correctly															
		Massachusetts													NAEP		MA 1974-75
		All	Sex		Region						Kind of Community				Nation	Northeast	
			M	F	1	2	3	4	5	6	1	2	3	4			
	OBJECTIVE 1																
5*	I operate machine tools, repair metal parts, etc. What am I?	26	37	16	20	33	35	25	29	26	26	36	22	29	19	21	
6*	I design buildings and organize construction. What am I?	80	75	85	78	86	79	77	81	79	75	69	86	79	68	72	
7*	I receive and pay out money and keep bank records. What am I?	68	66	70	65	70	72	67	73	69	67	66	68	69	79	81	
8	Which person usually earns the most money?	81	86	76	79	85	83	82	83	78	75	87	82	80	67	75	
9	Which person usually earns the most money?	58	49	67	53	60	56	64	56	63	50	57	60	62	70	72	
10	Which of these jobs requires heavy lifting and bending?	87	87	87	84	91	89	88	88	86	84	85	89	87	90	91	
14	In which vocational area does a BARBER belong?	49	49	49	53	47	51	43	57	47	50	47	52	45			46
15	In which vocational area does an AUTO MECHANIC belong?	75	71	79	73	77	78	75	75	75	73	70	76	77			87
16	In which vocational area does a STORE CLERK belong?	94	92	96	92	95	90	96	96	94	89	95	95	95			95
17	In which vocational area does a PHYSICAL THERAPIST belong?	87	87	87	88	87	81	85	90	86	84	86	88	87			72
18	In which vocational area does a TV REPAIRPERSON belong?	78	75	80	77	79	77	77	80	78	74	73	79	80			83
19	In which vocational area does an INSURANCE AGENT belong?	81	80	81	76	85	88	81	85	79	72	75	84	83			77

* Open-ended item.

TABLE 12 (continued)

Item #	Description of Item	Percentage of Students Answering Correctly															
		Massachusetts													NAEP		MA 1974-75
		All	Sex		Region						Kind of Community				Nation	Northeast	
			M	F	1	2	3	4	5	6	1	2	3	4			
	OBJECTIVE 1 (continued)																
20	In which vocational area does a PRINTER belong?	73	73	72	73	72	73	72	71	75	70	74	72	75			54
21	In which vocational area does a DENTAL ASSISTANT belong?	84	83	86	84	85	82	86	88	81	83	83	86	83			66
22	In which vocational area does a REAL ESTATE BROKER belong?	86	86	86	84	89	91	85	89	85	82	84	88	87			78
23	In which vocational area does a NUTRITIONIST belong?	95	94	97	95	95	95	97	94	95	92	96	97	96			88
24	In which vocational area does a FURNITURE MAKER belong?	93	91	94	92	93	95	92	95	94	89	92	95	92			78
39	Which job requires the least supervision of other workers?	51	50	51	47	51	56	49	49	56	44	49	52	51			46
40	Which job requires the most supervision of other workers?	33	41	26	36	36	31	32	32	28	28	35	37	29			30
41	Which job would allow the most independence?	20	18	22	25	17	15	21	17	16	28	26	16	16			26
56	Which occupation would have the highest salary?	35	36	34	36	40	35	[illegible]	32	35	29	31	42	30			46
	OBJECTIVE 2																
11	Which one of the following jobs requires good color vision?	92	91	93	90	92	94	93	95	91	86	90	94	93	93	92	
12	For which job is good eyesight important?	94	95	94	94	94	94	94	94	95	89	92	96	95	95	95	
13	For which job is it important to work fast with your fingers?	96	94	97	95	95	96	96	97	98	94	94	97	96	96	96	
27	What kind of training is needed to be a WAITRESS/WAITER?	91	90	93	90	91	90	90	93	94	81	93	94	91			93
28	What kind of training is needed to be a GLASS BLOWER?	62	60	64	60	63	63	59	75	62	53	55	68	62			61

TABLE 12 (continued)

Item #	Description of Item	Percentage of Students Answering Correctly															
		Massachusetts													NAEP		MA 1974-75
		All	Sex		Region						Kind of Community				Nation	Northeast	
			M	F	1	2	3	4	5	6	1	2	3	4			
	OBJECTIVE 2 (continued)																
29	What kind of training is needed to be a HOSPITAL ATTENDANT?	23	22	24	26	22	21	25	21	19	21	31	22	21			26
30	What kind of training is needed to be a SOCIAL WORKER?	70	63	78	74	71	64	70	63	69	66	66	76	66			41
31	What kind of training is needed to be a REFRIGERATION MECHANIC?	81	82	79	78	86	76	83	74	80	69	84	84	80			62
32	What kind of training is needed to be a BLACKSMITH?	71	67	74	71	72	69	64	80	70	59	60	78	70			67
33	What kind of training is needed to be a PHARMACIST?	87	88	87	85	90	91	87	86	90	81	90	89	88			79
34	What kind of training is needed to be an AUTOMOBILE SALESMAN?	52	54	50	48	55	52	54	52	51	49	56	51	52			50
35	What kind of training is needed to be an ENGINEER?	59	62	57	58	63	66	55	62	57	53	51	66	57			64
36	Which job requires the longest period of training?	75	73	78	75	78	72	74	72	76	65	75	80	73	64	70	
37	Which job requires the longest period of training?	79	76	82	82	81	69	76	74	81	66	76	85	79	81	83	
38	Which job requires the longest period of training?	62	53	71	60	63	64	63	59	64	53	53	66	65	59	63	
42	A RADIO ANNOUNCER has which of these eight characteristics?	89	88	89	85	92	92	88	88	89	78	86	93	88			90
43	A POLICE OFFICER has which of these eight characteristics?	63	56	69	57	65	68	66	66	62	53	58	66	66			68
44	A SECRETARY has which of these eight characteristics?	37	40	34	35	41	46	35	40	33	38	36	37	36			46
45	A BUTCHER has which of these eight characteristics?	78	75	81	72	81	83	80	84	78	70	70	82	81			80
46	A BUS DRIVER has which of these eight characteristics?	58	55	61	52	63	62	59	63	56	44	55	63	59			60

TABLE 12 (continued)

Item #	Description of Item	Percentage of Students Answering Correctly															
		Massachusetts													NAEP		MA 1974-75
		All	Sex		Region						Kind of Community				Nation	Northeast	
			M	F	1	2	3	4	5	6	1	2	3	4			
	OBJECTIVE 2 (continued)																
47	A TV REPAIRMAN has which of these eight characteristics?	43	42	44	40	47	56	41	47	41	35	40	46	47			46
48	A RECEPTIONIST has which of these eight characteristics?	48	47	50	43	53	52	48	54	48	36	40	55	49			49
49	A DRAFTSPERSON has which of these eight characteristics?	37	34	39	31	40	41	38	41	36	28	32	42	35			36
54	The program described will prepare John to be:	38	36	39	38	40	39	38	33	35	34	37	39	37			44
55	To prepare for being a police officer, Sue should:	81	76	86	75	86	87	84	81	84	73	78	85	83			75
84	What level of math does being a SALES CLERK require?	91	89	94	90	90	96	90	93	94	81	91	96	90			92
85	What level of math does being an ELECTRICIAN require?	37	47	27	40	40	31	35	37	31	31	43	39	34			34
86	What level of math does being an ENGINEER require?	90	89	90	89	91	93	88	92	90	78	89	95	88			92
87	What level of math does being a BANK TELLER require?	69	66	72	67	74	71	68	71	68	62	66	75	67			74
88	What level of math does being a METEOROLOGIST require?	78	78	79	77	79	75	80	76	79	76	76	78	80			74
	OBJECTIVE 3																
4*	List five things to consider when choosing a career.**	63	63	64	64	63	67	64	52	68	47	57	72	63	85	87	
26*	List five ways to learn more about a job before taking it.**	65	60	70	60	66	72	67	64	70	50	55	73	67	56	59	
50	Does Diane have enough skill to continue with cabinet making?	58	58	58	54	61	70	57	62	57	48	50	64	57			60
51	Should Warren become a merchant seaman?	86	82	90	84	88	85	88	85	87	75	85	91	86			84

** Mastery Criteria: Item #4 = 5 of 5 correct; Item #26 = 3 of 5 correct.

TABLE 12 (continued)

Item #	Description of Item	Percentage of Students Answering Correctly															
		Massachusetts													NAEP		MA 1974-75
		All	Sex		Region						Kind of Community				Nation	Northeast	
			M	F	1	2	3	4	5	6	1	2	3	4			
	OBJECTIVE 3 (continued)																
52	In this situation, what should Elaine do?	45	41	49	44	42	43	45	50	48	39	47	46	46			40
53	In this situation, what should Max do?	42	43	41	39	43	45	42	44	45	36	37	45	44			41
57	By talking with a qualified person, you could learn about your expected salary. T or F?	86	84	87	85	84	83	88	86	86	82	82	87	86			
58	By talking with a qualified person, you could learn about useful school courses. T or F?	91	88	94	87	92	96	89	93	95	85	87	94	91			
59	By talking with a qualified person, you could learn about necessary skills. T or F?	91	87	94	89	92	93	88	93	92	85	87	93	91			
60	By talking with a qualified person, you would know your future co-workers. T or F?	69	65	73	64	67	69	71	80	71	65	67	70	70			
61	By talking with a qualified person, you could learn about advancement chances. T or F?	81	79	84	81	80	81	83	84	81	78	79	83	82			
75	Which is an Equal Opportunity Employer not expected to do?	77	73	81	74	75	82	77	85	80	65	71	82	79			
76	All of the following are fringe benefits except:	79	81	77	74	83	79	78	83	80	64	76	84	80			
77	Which one of the following is a Social Security benefit?	87	87	88	83	89	87	88	88	91	80	87	89	89			
94	Risa's career plans might include such jobs as:	55	57	54	49	59	65	54	63	56	43	48	62	56			64
95	Linda's career plans might include such jobs as:	72	70	74	65	78	75	70	75	72	58	63	79	72			72
96	Fred's career plans might include such jobs as:	38	37	39	39	38	34	37	38	39	36	40	39	38			43

TABLE 12 (continued)

Item #	Description of Item	Percentage of Students Answering Correctly															
		Massachusetts													NAEP		MA 1974-75
		All	Sex		Region						Kind of Community				Nation	Northeast	
			M	F	1	2	3	4	5	6	1	2	3	4			
	OBJECTIVE 3 (continued)																
97	Which job matches Karen's interests and abilities?	41	40	42	39	43	46	39	48	39	30	33	48	40			53
98	Tom's post-high-school plans should include:	53	52	54	49	51	56	51	53	62	44	48	56	55			63
99	In 10 years, will we need more or fewer MATHEMATICIANS?	48	50	46	50	49	51	50	41	46	47	48	49	48			40
100	In 10 years, will we need more or fewer FORESTERS?	48	49	46	46	47	51	49	46	50	39	53	50	45			42
101	In 10 years, will we need more or fewer BUSINESS MACHINE REPAIRPERSONS?	76	75	77	75	77	77	76	75	77	69	74	78	77			72
102	In 10 years, will we need more or fewer ELEMENTARY TEACHERS?	64	61	67	66	67	70	56	57	66	48	61	72	62			40
103	In 10 years, will we need more or fewer COMPUTER PROGRAMMERS?	85	85	86	82	88	85	88	80	89	76	81	89	87			83
104	In 10 years, will we need more or fewer LAB TECHNICIANS?	82	81	82	80	84	85	82	83	82	74	81	84	84			72
105	In 10 years, will we need more or fewer ELECTRICAL ENGINEERS?	78	76	79	72	78	89	84	75	79	70	73	81	80			58
106	In 10 years, will we need more or fewer SECRETARIES?	33	33	33	35	29	30	35	29	32	31	34	33	33			22
	OBJECTIVE 4																
1	A job resume is:	63	58	68	60	65	62	61	61	67	53	53	70	61			
2	What should you do about the mistakes Ted has made?	87	84	89	85	88	90	86	84	88	80	82	91	85			
3	Whom should you tell about the lack of safety equipment?	78	73	82	78	77	80	77	77	78	76	77	78	78			
66	To have a good job interview, you should be on time. T or F?	97	94	99	95	97	98	98	97	98	93	94	99	97			

TABLE 12 (continued)

Item #	Description of Item	Percentage of Students Answering Correctly															
		Massachusetts													NAEP		MA 1974-75
		All	Sex		Region						Kind of Community				Nation	Northeast	
			M	F	1	2	3	4	5	6	1	2	3	4			
	OBJECTIVE 4 (continued)																
67	To have a good job interview, you should speak only when asked a question. T or F?	65	58	72	67	64	67	63	72	61	50	61	71	66			
68	To have a good job interview, you should answer the questions accurately. T or F?	96	94	98	95	95	99	96	97	97	92	94	98	96			
69	To have a good job interview, you should show interest in the job. T or F?	97	95	98	95	97	100	97	98	98	93	96	98	97			
74	Which question should you ask first during a job interview?	85	81	89	81	86	89	85	89	87	75	78	90	85			
78*	*Bar Graph*: How many trees were planted on Wednesday?	94	95	94	93	96	97	94	96	94	89	94	96	95	97	97	
79*	*Bar Graph*: How many trees were planted on Thursday?	81	81	81	77	83	84	82	83	83	69	79	84	85	89	90	
80*	*Bar Graph*: How many trees were planted on Friday?	34	35	33	34	36	34	32	33	36	26	31	38	34	55	52	
81*	According to the blueprint, how long is the office at Side X?	85	90	81	82	88	92	82	88	86	70	85	91	84	88		
82*	According to the blueprint, how long is the office at Side Y?	81	87	75	76	85	87	80	87	80	65	80	87	81	86		
81/82*	*Percent of students answering Questions 81 AND 82 correctly.*	77	85	69	73	80	84	74	84	76	61	76	84	76	84	87	
83*	According to the blueprint, how many square feet of floor space are there in the office?	35	41	30	30	39	42	34	39	36	25	24	42	36	49	49	
89A*	On the envelope, write in the return name.	95	94	97	91	97	97	96	98	99	88	93	98	97			
89B*	On the envelope, write in the return street.	96	94	97	92	97	99	96	98	98	88	94	98	98			

TABLE 12 (continued)

Item #	Description of Item	Percentage of Students Answering Correctly														
		Massachusetts													NAEP	MA 1974-75
		All	Sex		Region						Kind of Community					
			M	F	1	2	3	4	5	6	1	2	3	4	Nation	Northeast
	OBJECTIVE 4 (continued)															
89C*	On the envelope, write in the return city, state, and zip.	96	94	97	92	97	98	96	98	99	88	94	98	97		
89D*	On the envelope, write in the addressee's name.	97	96	98	93	98	100	98	98	99	90	96	99	98		
89E*	On the envelope, write in the addressee's street.	97	96	98	94	98	100	98	99	99	91	97	99	98		
89F*	On the envelope, write in the addressee's city, state, and zip.	97	96	98	94	98	100	98	98	98	91	97	99	97		
89G*	*Percent of students completing entire envelope correctly.*	95	93	97	91	97	96	95	97	98	87	93	98	96		
90	According to the table, what size socks should you buy if you wear Size 10 shoes?	91	89	93	86	94	95	91	91	93	78	88	95	92	87	87
92	In a phone book, "Jones" would be found between which 2 names?	84	82	86	81	86	92	83	91	85	72	83	89	85		
93	Which would be least worthwhile to discuss at the meeting?	69	68	71	63	73	80	69	70	71	54	61	77	69	79	78
	OBJECTIVE 5															
25	Whose fault was it that Mary did not buy the bread?	42	42	42	43	46	41	39	39	41	34	40	48	37		
62	To be a success, should a nurse get along well with others?	81	77	85	79	81	87	81	85	80	76	78	84	80		
63	To be a success, should a nurse sacrifice speed for accuracy?	88	86	91	87	88	90	89	89	89	83	84	91	89		
64	To be a success, should a nurse change jobs yearly?	92	90	94	91	93	92	92	97	92	88	89	95	92		
65	To be a success, should a nurse offer new ideas?	58	57	58	56	60	48	59	56	59	58	53	59	56		

TABLE 12 (continued)

Item #	Description of Item	Percentage of Students Answering Correctly															
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			M	F	1	2	3	4	5	6	1	2	3	4			
	OBJECTIVE 5 (continued)																
70	To become an accountant, should Lynn enroll in a college math course?	90	88	91	89	91	93	88	89	91	83	88	93	90			
71	To become an accountant, should Lynn express new ideas about her bookkeeping job?	73	71	74	72	73	70	76	71	74	74	69	75	71			
72	To become an accountant, should Lynn make decisions without consulting her boss?	81	79	83	79	82	80	78	82	83	79	76	84	77			
73	To become an accountant, should Lynn be dependable and enthusiastic about her job?	95	92	97	93	95	96	95	96	95	90	94	97	94			
91	In these circumstances, are you responsible for the injury?	83	82	84	76	85	86	83	87	89	72	79	86	87	83	83	
107	Is it important for success to always try to improve things?	93	94	92	91	93	96	94	93	94	86	90	96	94			93
108	Is it important for success to keep your mouth shut and not stir things up?	56	54	57	55	55	63	56	57	55	43	50	62	56			61
109	Is it important for success to learn to do your job better?	95	94	97	93	96	97	97	96	96	88	93	99	95			97
110	Is it important for success to get along well with others?	91	89	94	87	94	94	92	92	93	85	87	95	91			93
111	Is it important for success to keep quiet about your mistakes?	82	79	85	78	87	86	81	80	85	71	78	89	81			
112	Is it important for success to do work you can be proud of?	90	88	91	86	93	95	92	90	88	82	85	94	90			93
113	Is it important for success to do only what you are told?	36	34	39	38	36	44	35	33	36	30	32	42	33			

ACKNOWLEDGMENTS

STATEWIDE ASSESSMENT ADVISORY COMMITTEE

Fred Andelman	Massachusetts Teachers Association
Eugene Applebaum	Worcester Public Schools
Aida Burns	Southeast Regional Education Council
Louis Cedrone	Massachusetts Association for Supervision and Curriculum Development
Robert Cormier	Massachusetts Association of School Committees
Diane Coulopoulos	Massachusetts Advisory Council for Bilingual Education
Ronald Edmonds	Massachusetts Advocacy Center
William Fisher (Chairperson)	Massachusetts Association of School Superintendents
Louis Gleason	Association of Vocational School Administrators
Janice Green	Massachusetts Board of Higher Education
Jeffrey Hunt	Massachusetts Student Advisory Council
Bedros Kamitian	Massachusetts Association of Secondary School Principals
Nancy Kienzler	Springfield Regional Education Council
Loretta Kittredge	Parents, Teachers and Students Association
Gregory Konstantakos	Springfield Public Schools
Thomas Lafionatis	Association of Vocational School Administrators
Arigo Latanzi	Greater Boston Regional Education Council
Herve Lemaire	Massachusetts Association of Junior High School Principals
Fritz Lindquist	American Federation of Teachers
James Major	Massachusetts Office of Children
Mary McGaurvan	Northeast Regional Education Council
Louis Perullo	Boston Public Schools
Joseph Plouffe	Special Education Advisory Committee
Roger Richards	Pittsfield Regional Education Council
Marguerite Tibbert	Title I Parent Advisory Council
Corridon Trask	Central Massachusetts Regional Education Council
James Tynan	Massachusetts Association of Elementary School Principals
Susan Wiltshire	League of Women Voters

ACKNOWLEDGMENTS (continued)

INTERPRETIVE AND TECHNICAL PANEL

Robert Borden	Massachusetts Council for Vocational Technical Education
Patricia Budd	Peabody Public Schools
William Donovan	Kennedy Junior High School, Natick
James Gazzaniga	Mt. Greylock Regional High School
Charles Glenn	Bureau of Equal Educational Opportunity
Edwin Gooding	Federal Reserve Bank of Boston
James Hamilton	Division of Occupational Education
Paul Hayes	Boston Public Schools
Catherine Hopkins	Worcester Public Schools
Robert Manning	Brockton High School
John McIntosh	Division of Occupational Education
John Nevins	Westfield State College
Paul O'Leary	Southeastern Regional Vocational Technical School
Lawrence Ovian	Fitchburg State College
Gerald Paist	Pathfinder Vocational Technical School
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Manuel Rainha	Northeast Metropolitan Vocational School
Carmalita Scott	Pittsfield Public Schools
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Sidney Snegg	Springfield Public Schools
J. Michael Ward	Salem High School
Albert Williamson	Massachusetts School Counselors Association

BENCHMARK PANEL

Peter Finn	Winthrop Public Schools
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Ray Parrott	Massachusetts Advisory Council for Vocational Technical Education
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Juan Rodriquez	Bureau of Transitional Bilingual Education
Richard Shurtleff	East Longmeadow Public Schools
Robert Watson	Bureau of Curriculum Services

STATEWIDE EDUCATIONAL ASSESSMENT REPORTS

Limited copies of the following previous Statewide Educational Assessment Reports are available at the Department's six regional centers:

Reading 1974-75

Mathematics 1974-75

Decision Making 1974-75

Occupational Attitudes 1974-75

Occupational Knowledge 1974-75

Citizen Attitudes toward Education 1974-75

Public Response to Educational Goals 1974-75

Writing 1975-76

Social Studies/Citizenship 1975-76

Foreign Languages 1975-76

Science/Ecology 1976-77

Consumer Skills 1976-77

School Climate 1976-77

For further information, contact one of the regional assessment coordinators listed on the other side or Matthew Towle at (617) 727-8497.

USING THIS ASSESSMENT REPORT

The findings of this Assessment Report have implications for educators and others at both the state and local levels. To discuss both the findings and ways to use these findings, the Bureau of Research and Assessment has planned the following six regional workshops:

DATE	LOCATION	REGIONAL ASSESSMENT COORDINATOR
October 18, 1978	Northeast Regional Center	Peter Coffin (617) 687-3351
October 19, 1978	Greater Boston Regional Center	Athena Costopoulos (617) 547-7472
October 30, 1978	Springfield Regional Center	Ann Schumer (413) 739-7271
October 31, 1978	Pittsfield Regional Center	Winifred Green (413) 499-0745
November 1, 1978	Southeast Regional Center	Paul Francis (617) 947-3240
November 8, 1978	Central Mass. Regional Center	Adrienne Margules (617) 835-6267

We hope that you will be able to attend. We greatly appreciate your sharing this information with others.

ASSESSMENT CONTRACTOR: 1977-78

National Evaluation Systems, Inc.
30 Gatehouse Road
Post Office Box 226
Amherst, Massachusetts 01002

William P. Gorth
Sherry Ann Rubinstein
Martin B. Karlin
Dorit Sejwacz
Jay Stewart
Barbara Hannus